FOURTH EDITION

OFFICE MACHINES COURSE

ADDING AND CALCULATING MACHINES

PART 1

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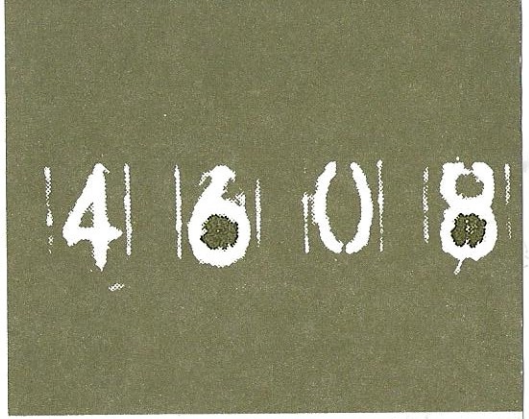

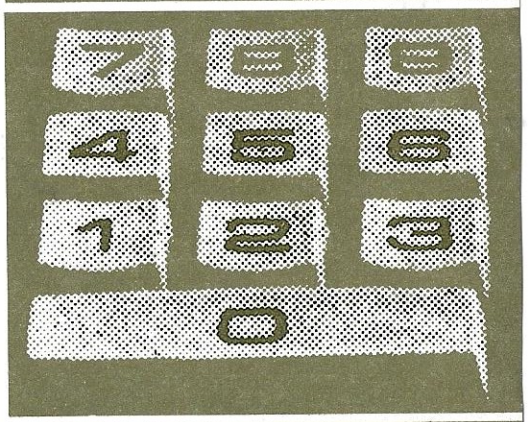

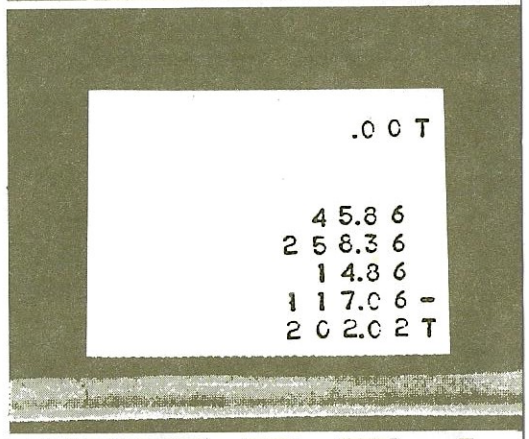

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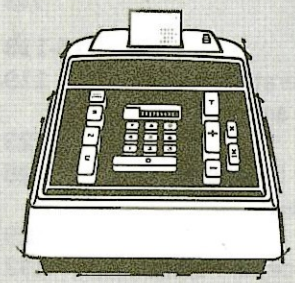
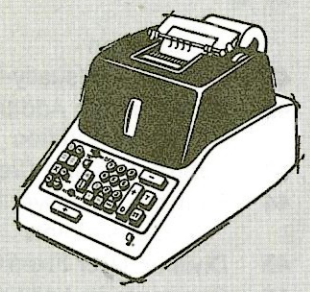
OFFICE MACHINES COURSE

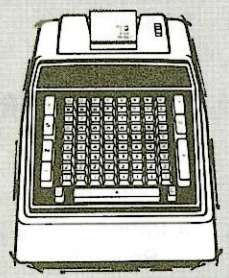


TEN-KEY ADDING LISTING

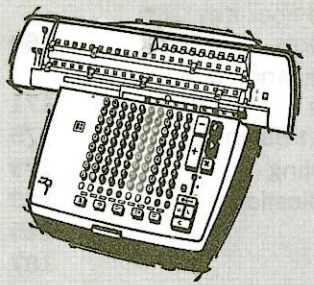


PRINTING CALCULATOR

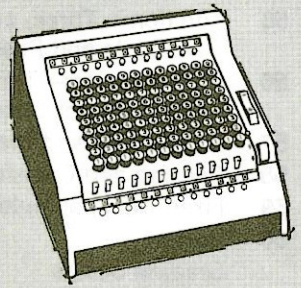
ELECTRONIC CALCULATOR



FULL-KEYBOARD ADDING LISTING



ROTARY CALCULATOR



KEY-DRIVEN CALCULATOR

FOREWORD

Teachers of office machines courses need a set of job sheets that contain typical business problems and the operational procedures to be followed to solve them with adding and calculating machines. This book contains sixty jobs that meet this need.

The job sheets are divided into six groups — one for each type of adding and calculating machine used in business offices today. Self-instructing directions are given for the operation of:

Ten-Key Adding and Listing Machines
Ten-Key Printing Calculators
Ten-Key Electronic Calculators
Full-Keyboard Adding and Listing Machines
Rotary Calculators
Key-Driven Calculators

The six sections are independent of each other. The proficiency developed in one section is not a prerequisite for the study of the remaining five. Each section contains the same number of jobs — ten. Students may be rotated from one battery of machines to another in any sequence that the instructor may indicate.

Each job is planned so that the average student can complete it in a class period. If the time allotted to machine practice makes it impossible for a student to complete every job, it is better to have students do some problems in every job than to omit selected jobs entirely. When time must be saved, the most satisfactory procedure to follow is to have students do every other problem of every job.

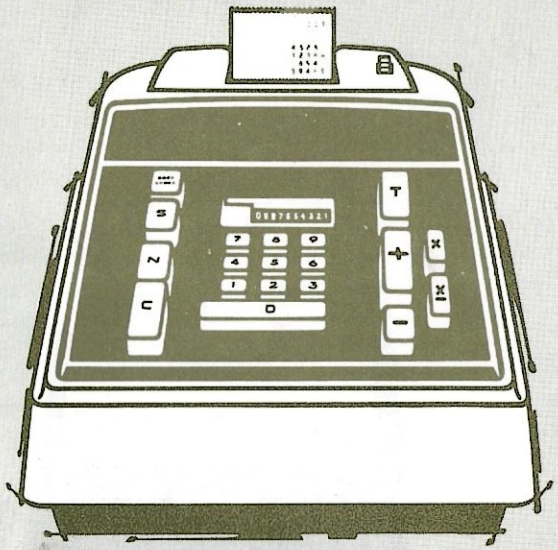
In planning and preparing the instructional material, certain basic qualities have been maintained:

1. The book is planned so that it is as self-instructional as possible. All instructions for new work are presented in an easy to follow, step-by-step plan.
2. The teaching materials are carefully planned, easy to follow, convenient for practice, and simple to check.
3. The jobs are arranged in carefully planned sequences, going from the simple to the somewhat more complex operations.
4. The instructional materials are well within the range of the ability of the student who may use this book.
5. The format of the book is designed so that it may be used easily at the machine. Students may remove the parts of the pages that contain problems and leave in the book for future reference the parts that contain instructional material.
6. Each timed drill contains problems which test the student's mastery of the new procedures presented in the job as well as provides the basis for the development of a reasonable speed. To encourage a student to strive for better achievement, self-grading scales are provided for every timed drill. A bonus is awarded for achievement that surpasses the norms listed on the grading scales.
7. With the use of this instructional material, the student attains a reasonable degree of efficiency in the basic operation of the six types of adding and calculating machines, and does so in a reasonable length of time.
8. The last job sheet of each of the six sections of this book contains a comprehensive review. These job sheets, job numbers 10, 20, 30, 40, 50, and 60, may be used as timed tests or as review, at the option of the teacher.
9. To help the teacher evaluate a student's achievement, twelve tests, two on each of the six sections, and a final examination are enclosed in each book. The final examination is divided into six parts — one for each section. The tests measure a student's performance at the machines; the final examination, his comprehension of the theory. Any test or section of the examination may be omitted without affecting the validity of the remaining tests or sections. Practical grading scales are provided for the evaluation of all jobs, tests, and final examination.
10. The materials in this course may be used on any of the various adding and calculating machines that are on the market. Special instructions are included to cover the more common differences that exist among those makes of machines and the various models thereof.

The authors would like to take this opportunity to express appreciation to the various machine manufacturers and their representatives who have been so cooperative.

N.J.C.
W.R.P.
P.L.A.

OFFICE MACHINES COURSE



TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

HIGHLIGHTS

An adding machine with only ten keys (1 through 9 and a zero) in its keyboard is called a ten-key adding machine. Some ten-key adding machines have three zero keys — a single zero key, a double zero key, and a triple zero key. While these machines are used primarily to add and to subtract, they can be used to multiply and to divide.

The outstanding feature of ten-key adding machines is that they can be operated by the touch method. Touch operation with its unlimited speed and accuracy potential, has made the ten-key adding machine the most popular adding machine on the market. Among the most commonly used in business offices are: **R. C. Allen, Burroughs, Comptograph, Friden, Marchant, Monroe, Odhner, Remington Rand, Underwood-Olivetti,** and **Victor**. While these machines are not exactly the same, they have similar keyboards. Proficiency acquired on one can be easily transferred to the others.

A ten-key adding machine can be readily identified by:

1. A keyboard that consists of three banks, each of which has three keys.
2. A zero bar or keys which are located at the bottom of or to the left of the keyboard.
3. A keyboard that enables an operator to use the center bank of keys consisting of 4, 5, and 6 as home keys from which he can reach up to 7, 8, and 9, and down to 1, 2, and 3.
4. A narrow roll of paper, called **tape**, on which are printed the items that are added, subtracted, multiplied, or divided.
5. A series of functional keys such as total keys, subtotal keys, non-add keys, repeat keys or multiplication bars, subtraction keys or bars, backspacers, digit indicators, and correction keys or levers.

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

PART NO. MACHINE PARTS

1 Backspace Key (Lever)

2 Clear Key (Lever)

3 Credit Balance Signal

4 Digit Indicator

5 Line Space Selector

6 Minus Bar (Key)

7 Multiplication Key (Lever)

8 Non-Add Key

9 Numeral Keys

10 Paper Release Lever

11 Platen Knob

12 Plus Bar

13 Repeat Key

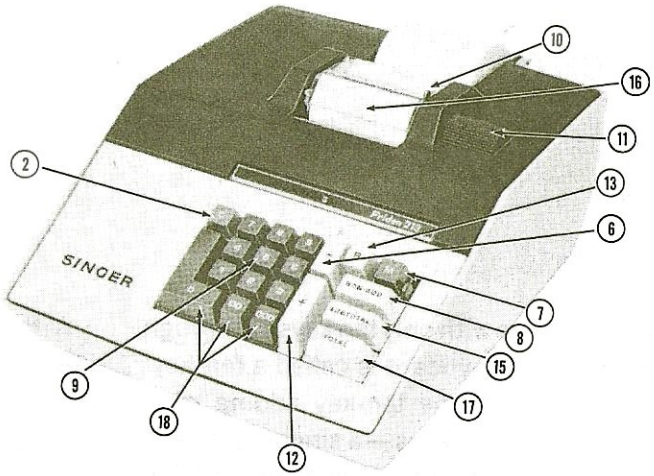
14 Repeat Subtract Key

15 Subtotal Key

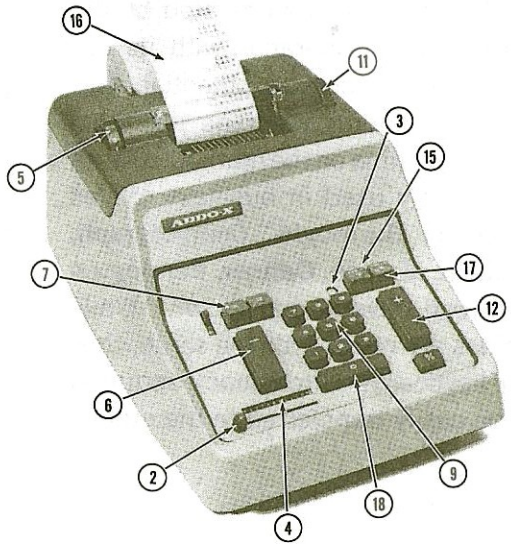
16 Tape

17 Total Bar (Key)

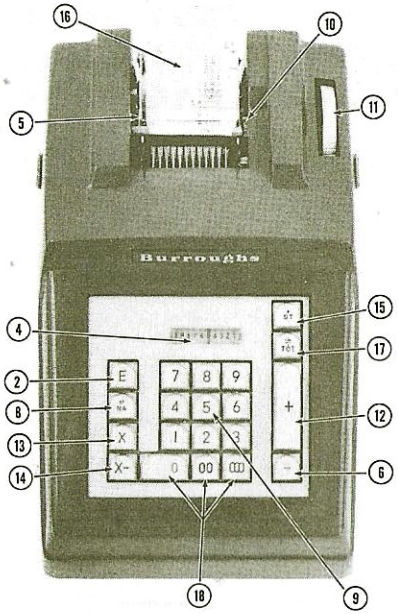
18 Zero Key(s)



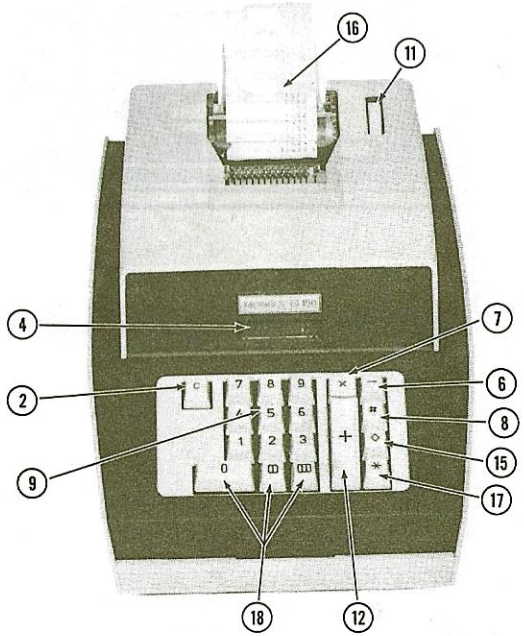
Friden



Addo-X

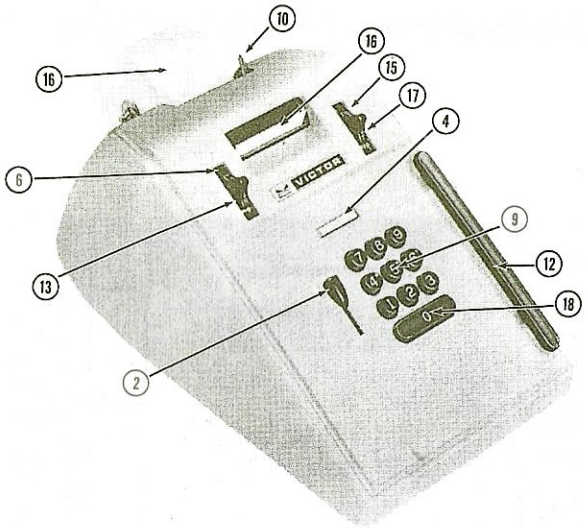


Burroughs

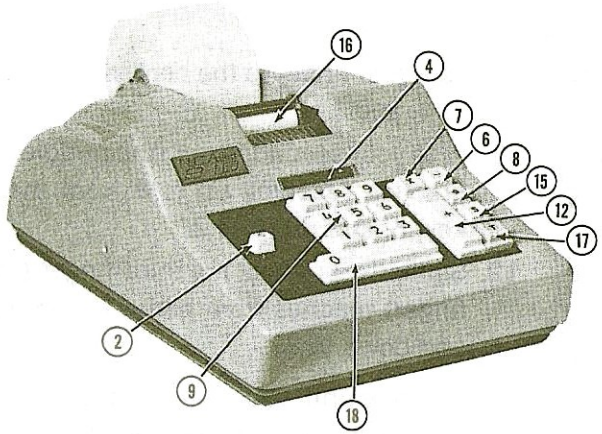


Monroe

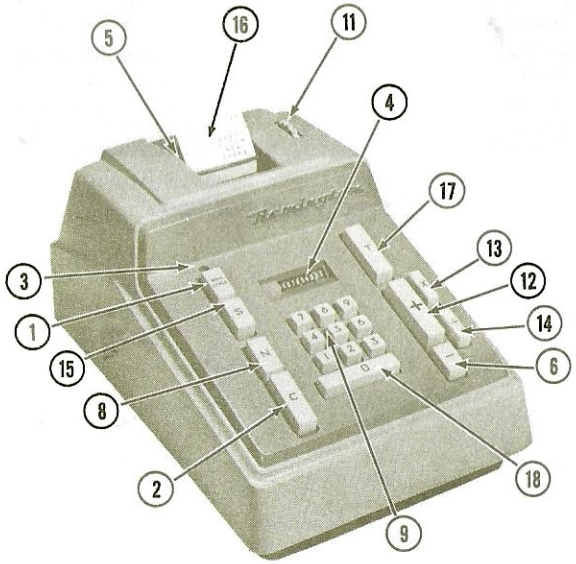
TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE



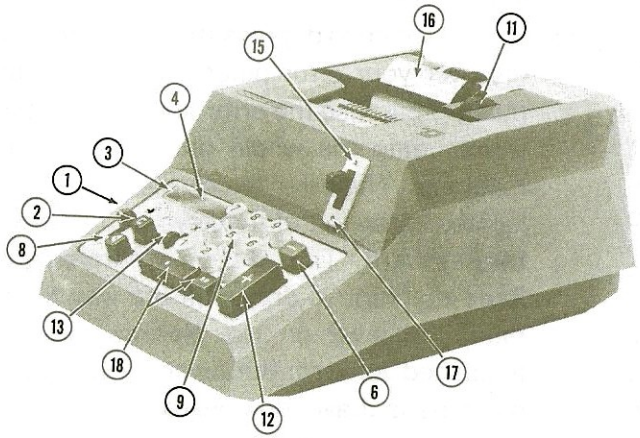
Victor



R. C. Allen



Remington



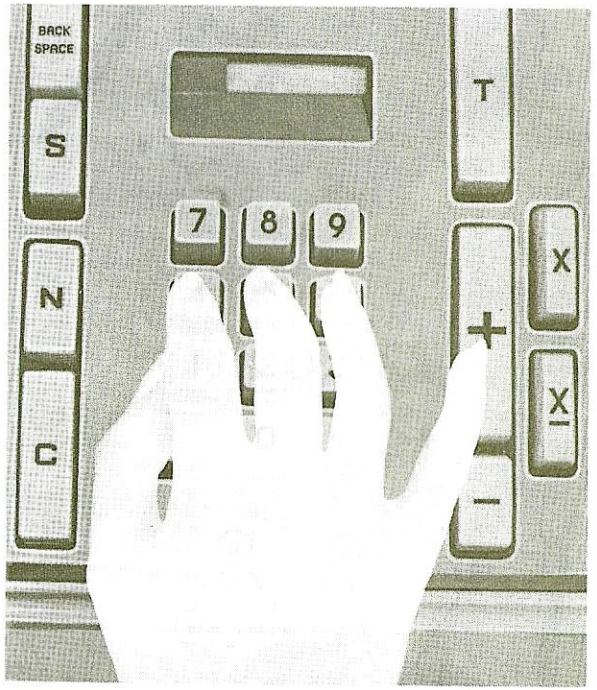
Underwood-Olivetti

PART NO.	MACHINE PARTS
1	Backspace Key (Lever)
2	Clear Key (Lever)
3	Credit Balance Signal
4	Digit Indicator
5	Line Space Selector
6	Minus Bar (Key)
7	Multiplication Key (Lever)
8	Non-Add Key
9	Numeral Keys
10	Paper Release Lever
11	Platen Knob
12	Plus Bar
13	Repeat Key
14	Repeat Subtract Key
15	Subtotal Key
16	Tape
17	Total Bar (Key)
18	Zero Key(s)

3

GENERAL INSTRUCTIONS

1. Read each job thoroughly before beginning problems.
2. Clear your desk or table of books that do not pertain to the course.
3. Place the machine to the right of your desk or table, at a slight angle, and this book at the left.
4. Position the machine and book to give you ease of operation and reading.
5. Sit erect, relax, and put both feet flat on the floor.
6. Put the thumb on the zero bar and the first, second, and third fingers on the middle bank of keys — the keys for 4, 5, and 6. This is the home-key position from which you reach out to all the keys on the keyboard.
7. Move your fingers up to the top bank of keys — the keys for 7, 8, and 9.
8. Bring your fingers back to the middle bank. Notice that the home keys, 4, 5, and 6, are deeper than those of the upper bank.
9. Reach down to the lower bank of keys — the keys for 1, 2, and 3. Notice that these are not so deep as the home keys.
10. With your first finger (the index finger), practice reaching up to 7 and down to 1 from the home key, 4. Your fingers should be curved slightly, and you should guide your first finger to the center of the keys for 7, 4, and 1.
11. With your second finger (the middle finger), practice reaching up to 8 from the home key, 5, and down to 2.
12. Similarly, practice the third-finger (the ring finger) reaches from home key, 6, up to 9 and down to 3.
13. Practice until you can reach for the figures 1 through 9 without looking at your fingers.
14. Practice depressing the zero bar or keys, using the thumb.
15. Strike the keys firmly in the center and release them quickly. You can strike only **one** key at a time; therefore, be sure to release quickly so that the next key can be depressed.
16. If you happen to depress the wrong key and discover your error before depressing the plus (+) bar, use the error key, bar, or lever to eliminate the whole number from the machine. The error or correction keys are located at the left of the keyboard or below the keyboard. The lever on the **Remington Rand** machine is drawn all the way to the right; the lever on the **Monroe** machine is pushed forward; the lever on the **Victor** machine is drawn downward.



Correct Hand Position

TOUCH ADDITION

JOB NO. 1
TOUCH
ADDITION

Name_____ No. of Errors_____

Period_____ Date_____ Rating_____

AIM:

To develop speed and accuracy in touch addition.

PROCEDURE

You should be familiar with the information on the introductory pages of this section before you begin the problems.

1. CLEAR THE MACHINE.

a. Depress the correction key or bar located at the left of the keyboard, or move the correction lever **up on the Monroe,** to the **right on the Remington Rand,** and **down on the Victor.** This will eliminate any numbers that may have been left in the machine. Correction keys are marked "C", "E", or "Correction."
Note: If your machine has a multiplication (X) key or a repeat (R) key that latches down, be sure to release it by moving the key backward before attempting to clear the machine.

b. Take a total.

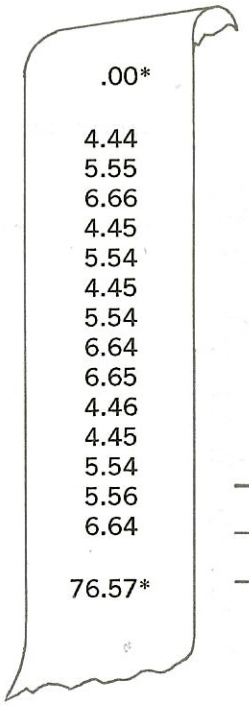
(1) Depress the total key, marked (T), (*), (NO+ TOTAL) or (TOTAL). On some machines, the total key must be depressed twice in order to get the "clear" symbol. Move the total lever **up on the Victor** machine.

2. USE THE TOUCH METHOD

you practiced earlier to complete the problems in this job. Keep your eyes on the figures of the problem, **not on the keyboard.** You must find the keys **only by touch.** In listing items in Problems 1-8, you should:

a. Use the first finger of the right hand to depress 4. Use a firm, quick stroke, and release the key as though it were red-hot.

b. Use the second finger to depress 5, and be sure to release the key quickly.



The tape for Problem 1 from a Burroughs Ten-Key Adding Machine.

1	2	3	4
4.44	4.56	4.65	6.54
5.55	6.54	5.64	4.65
6.66	4.56	6.54	4.56
4.45	6.54	4.65	5.64
5.54	4.55	6.54	6.54
4.45	4.66	5.64	4.65
5.54	5.54	4.65	6.54
6.64	6.65	6.54	5.64
6.65	6.64	5.46	6.54
4.46	5.64	6.54	5.64
4.45	4.65	5.64	4.56
5.54	6.45	6.45	5.46
5.56	6.54	4.65	4.65
6.64	5.56	5.64	6.54

5	6	7	8
4.04	5.06	4.50	6.54
5.05	6.05	5.40	4.56
6.06	5.06	6.50	5.64
4.56	5.04	4.60	6.45
4.50	4.05	5.40	5.56
5.40	6.05	6.50	4.56
6.50	5.04	4.40	5.44
6.04	5.06	5.50	5.64
5.06	4.05	6.60	6.44
6.05	4.65	6.50	6.45
4.50	6.05	6.40	5.64
4.60	5.06	5.60	6.64
5.40	4.05	4.50	5.46
6.50	5.04	6.40	4.65

ANSWERS

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____
8 _____

5

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 1 / CONTINUED

9	10	11	12	13
7.45	6.57	5.67	7.65	7.45
4.57	6.75	6.74	6.75	6.57
5.67	5.67	7.45	5.76	5.67
4.57	6.74	4.75	7.56	7.65
7.45	5.74	4.57	7.65	4.57
4.75	7.54	5.77	5.67	6.75
4.57	5.47	7.54	6.74	6.74
5.74	5.76	5.47	5.76	5.74
7.54	6.74	5.67	6.75	4.75
5.47	7.56	6.75	6.57	7.45
5.76	5.67	6.57	7.56	7.54
6.75	6.74	7.56	7.65	4.57

14	15	16	17	18
8.56	4.58	5.78	4.85	8.56
5.86	4.48	4.78	5.86	4.58
6.48	6.48	6.87	7.84	5.78
5.86	5.68	7.68	8.47	4.85
6.85	4.68	8.76	7.56	5.86
5.48	6.58	4.87	6.74	4.48
6.48	8.54	5.87	4.75	4.78
5.86	5.84	7.85	5.67	5.86
6.85	6.84	8.57	4.56	4.58
4.58	4.86	6.87	8.56	6.48
5.48	6.85	7.58	5.47	6.58
6.58	6.48	8.56	4.67	5.86

ANSWERS

9 70.29
10 76.95
11 74.51
12 82.67
13 35.45
14 74.92
15 71.89
16 84.04
17 ~~75.80~~
18 68.25

TOUCH ADDITION

c. Use the third finger to depress 6, and release it quickly.
d. Use the thumb to depress the zero bar, and release it as quickly as you released 4, 5, and 6.
e. After depressing the keys for all figures in the number, use the fourth finger to operate the plus (+) bar.

3. **COMPLETE ADDITION.** Work your way down the problem depressing all keys by the touch method.

4. **DEPRESS KEYS** in the same order, left to right, that you follow to write numbers.

5. **TAKE A TOTAL.** Follow the instructions under 1 (b).

6. **WRITE THE ANSWER** directly below the problem in the space provided, and immediately do the problem a second time. If the second answer is the same as the first, write it in the proper space in the Answers column. If the second answer is different from the first, write it directly below the first answer and do the problem again. Write the answer that proves to be correct in the Answers column at the right.

7. **KEYS 7, 8, AND 9** are introduced in Problems 9-23. The same touch method should be used to depress these keys as that used for 4, 5, 6.
   a. The first finger depresses the 4 and 7 keys.
   b. The second finger depresses the 5 and 8 keys.
   c. The third finger depresses the 6 and 9 keys.

8. **KEYS 1, 2, AND 3** are presented in Problems 24-28. The touch method for the proper depression of these keys is:
   a. The first finger depresses the 4, 7, and 1 keys.

b. The second finger depresses the 5, 8, and 2 keys.
c. The third finger depresses the 6, 9, and 3 keys.

9. **FOUR-DIGIT NUMBERS** are presented in Problems 29-38. The same touch method is used regardless of the size of the number.

10. **TEAR OFF TAPE** when it becomes as long as this page and number the problems.

11. **COMPLETE ALL PROBLEMS** of this job. Tear out pages 5 to 8 along the perforated lines. Arrange the tapes in numerical order, and attach them to the left side of this job sheet.

12. **GIVE JOB TO INSTRUCTOR** when completed.

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 1 / CONTINUED Name_____ Period_____

19	20	21	22	23
6.95	4.59	8.97	9.45	6.95
5.96	6.79	6.49	8.94	4.59
9.65	8.69	7.69	4.79	8.97
4.59	4.79	8.49	9.57	9.45
5.69	6.49	4.59	6.79	5.96
6.95	8.59	8.96	7.89	6.79
8.96	7.59	6.59	9.68	6.49
5.89	6.59	5.49	4.89	8.94
5.86	5.69	8.69	9.74	4.59
6.59	4.69	6.89	8.94	9.65
8.69	7.49	4.69	7.49	8.69
6.95	9.54	8.59	5.69	7.69

24	25	26	27	28
4.15	8.41	5.25	6.52	6.36
7.41	4.19	2.52	5.24	3.63
5.71	9.41	5.02	4.62	6.03
1.54	1.49	2.05	6.25	3.06
8.41	8.16	5.25	4.25	6.36
5.41	7.61	5.02	4.52	6.03
7.51	1.97	2.05	4.62	3.06
8.71	7.41	2.25	6.25	3.36
5.71	8.17	5.52	2.25	6.63
4.81	1.67	2.25	4.65	6.03
1.84	1.74	2.52	2.54	3.63
7.18	5.14	5.22	6.52	3.06

ANSWERS

19 _____
20 _____
21 _____
22 _____
23 _____
24 6839
25 6537
26 4452
27 58.23
28 5724

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 1 / CONTINUED

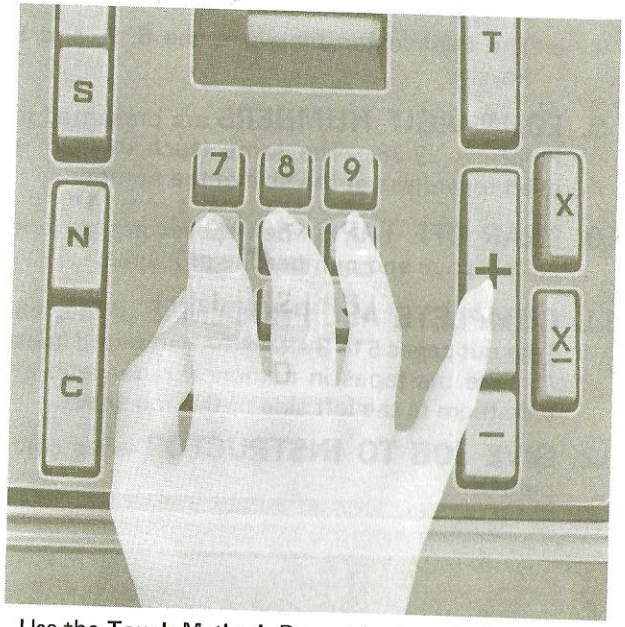
29	30	31	32	33
42.70	72.06	12.60	52.06	42.70
59.20	75.02	24.60	24.05	72.06
29.10	52.09	76.20	52.08	12.60
64.20	62.09	12.70	95.02	52.06
46.20	24.09	84.20	25.04	42.70
29.60	27.01	62.10	52.01	59.20
62.70	79.02	24.10	16.02	75.02
62.50	52.08	14.20	52.09	24.60
85.20	82.09	27.40	51.02	24.05
98.20	87.02	26.70	58.02	72.06
12.80	19.02	42.50	26.01	29.10
62.40	24.07	86.20	42.08	52.09

34	35	36	37	38
60.35	60.13	10.83	30.46	50.26
90.63	90.31	30.19	50.34	20.45
30.56	30.56	10.39	30.13	50.28
80.63	80.63	30.27	50.31	90.52
20.63	30.29	70.93	30.59	20.54
30.65	20.37	90.36	10.32	50.21
60.43	40.23	90.73	40.93	10.62
70.63	30.52	50.43	60.39	50.29
90.53	40.31	50.13	50.93	50.12
50.39	30.65	80.23	90.23	50.82
80.36	80.34	30.68	30.25	20.61
40.45	30.82	30.81	60.31	50.28

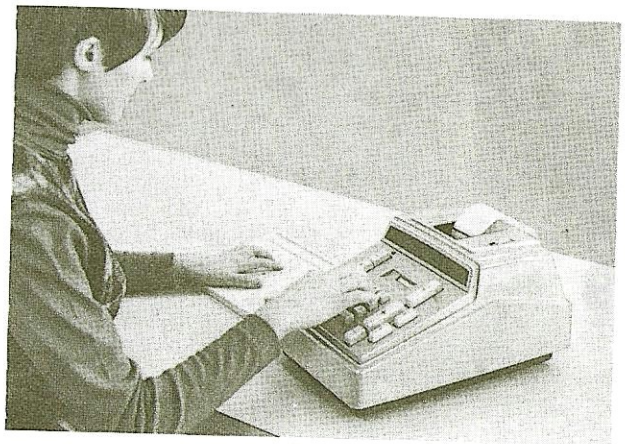
ANSWERS

29 654.80
30 655.66
31 493.50
32 545.50
33 558.24
34 706.24
35 565.16
36 575.98
37 535.19
38 515.00

TOUCH ADDITION



Use the **Touch Method**. Do not look at the keyboard.



Correct position at machine.

2 SUBTRACTION AND CORRECTION OF ERRORS

JOB NO. 2
SUBTRACTION AND CORRECTION OF ERRORS

Name _____ No. of Errors ____
Period _____ Date _____ Rating _____

AIMS:

1. To present the use of the minus key (—) in subtraction.
2. To present the procedure for correcting errors in numbers that have already been printed on the tape.

HIGHLIGHTS

Subtraction, like addition, is performed by the touch method. The subtraction key is located at either the upper or lower right-hand side of the keyboard, and is marked with a minus (—) sign. It can be a "live" subtraction key, in which case amounts are subtracted by merely depressing this key. To subtract on other machines, the plus (+) bar must be operated after the subtraction (—) key has been depressed.

PROCEDURE

1. **CLEAR THE MACHINE.** An asterisk (*), (◇), or "T" must appear at the beginning and the end of the tape for each problem.
2. **SUBTRACT** following the instructions given below for doing Problem 1.
   a. Depress, by touch, the minuend (top number), 37.53, and operate the plus (+) bar.
   b. By touch, enter the subtrahend (bottom number), 12.50, and depress the subtraction key. On some machines, you may have to operate the plus (+) bar after depressing the subtraction (—) key.
   c. Take a total as usual, and record the answer, 25.03, in the space provided.
3. **ENTER "ER" ITEMS** (Problems 11-15) by using the following procedure:

1	2	3	4	5
37.53	99.75	177.51	585.35	473.10
—12.50	—10.43	—88.02	—102.00	—123.55

6	7	8	9	10
91.50	64.80	127.96	174.57	738.67
—73.11	—28.82	—18.54	—69.81	—40.75

11	12	13	14	15
18.63	83.10	109.38	613.40	85.96
62.91	96.55	872.29 Er.	89.57	3.26 Er.
67.00	47.85	872.29—	430.20 Er.	3.26—
12.47 Er.	36.00	72.29	430.20—	30.26
12.47—	84.42	3.76	43.20	880.87
21.47	97.80 Er.	605.80	3.96	752.83
30.34	97.80—	3.45	540.88	89.74
45.21	79.80	230.50	34.94	189.50
29.26	64.74	23.41	753.70	9.74
32.50	90.56	203.41	318.95	904.15
91.75	86.43	4.86	41.85	36.70
32.05	18.65	605.32	31.81	5.02

ANSWERS

1. 25.03
2. 89.32
3. 89.49
4. 483.35
5. 349.55
6. 18.39
7. 35.98
8. 109.42
9. 104.76
10. 697.52
11. 431.12
12. 688.10
13. 1862.18
14. 247.26 / 186.1
15. 29.477

JOB NO. 2 / CONTINUED

16	17	18
191.50	164.80	127.96
−73.11	−28.82	−18.54

19	20	21
264.90	142.40	368.66
−42.10	−27.95	−14.28

ANSWERS

16 118.39
17 135.98
18 109.42
19 222.80
20 114.45
21 354.38

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

_____ minutes

Subtract _____ required

TIMED DRILL

1	2	3	4	5	6
591.72	20.02	417.45	246.48	25.50	175.10
151.62	918.06	205.60	78.23	506.30	305.65
186.12	737.20	72.70	678.90	418.95	760.00
23.57	605.25	305.44	652.32	585.99	26.16
.08	.05	12.01	500.00	177.40	41.39
1.67	803.81	7.25	.06	21.53	510.16
285.29	2.17	818.44	802.50	.09	4.49
183.05	500.80	.07	25.30	3.90	144.00
19.22	19.42	480.95	1.75	125.00	.04
702.31	879.89	21.31	65.20	489.07	188.02
728.52	2.54	399.22	123.00	19.90	121.64
3.75	506.86	191.23	217.67	566.33	485.16
45.67	156.09	51.75	82.40	23.98	144.10
187.12	45.20	312.50	145.75	10.02	95.34
3,109.71	5,197.36	3,295.92	3,619.56	2,973.96	3,001.25

2 SUBTRACTION AND CORRECTION OF ERRORS

a. Items marked "Er" are those for which the wrong figures were depressed and printed on the tape.
b. Depress the keys for these numbers as they appear in the problem.
c. Depress the same keys a second time, operate the subtraction (—) key, and depress the plus (+) bar, if necessary.
d. Depress the keys for the next item, which is the correct number.
e. In the future, use this method to correct errors in numbers that have already been printed.

4. COMPLETE TIMED DRILL.

a. Do each problem only **once**.
b. Place a check mark (✓) next to the answer if your answer is correct, an (X) if incorrect.
c. In the spaces provided on page 10 record the starting and finishing time. Drop fractions of a minute smaller than ½. Fractions larger than ½ minute but less than one full minute are recorded as ½ minute. Subtract to get the time required for completion of the drill.
d. Count the (X's) and use Grading Scale No. 2 on page 187 to determine your grade.
e. If you have time, do the Timed Drill again.
f. Always record your best grade on the Achievement Chart on page 188.

5. ATTACH TAPES to the left side of the job sheet.

6. GIVE JOB TO INSTRUCTOR when completed.

3 TOUCH ADDITION AND NON-ADD KEY

JOB NO. 3
TOUCH ADDITION
AND NON-ADD KEY

Name _____ No. of Errors ____

Period _____ Date _____ Rating _____

AIMS:

1. To present the procedure for indexing five-digit numbers containing zeros.
2. To present the use of the non-add key to print a number without adding it.

HIGHLIGHTS

The non-add key is used when a number must be recorded but not added. In this and all future lessons, you will be using the non-add key to number problems. In business, the non-add key can be used for making numerical notations or for printing reference information such as invoice, time-card, or check numbers.

PROCEDURE

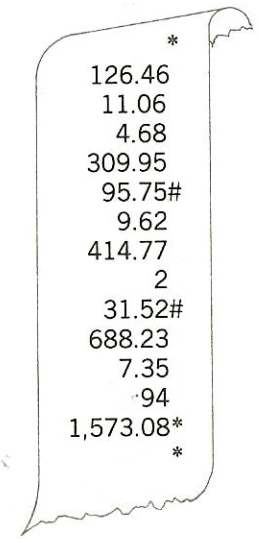
1. **CLEAR MACHINE.** An asterisk (*), (T), or (◇) must appear at the beginning and end of the tape for each problem.
2. **NUMBER EACH PROBLEM** by using the non-add key.
   a. Depress keys for the number.
   b. Depress the non-add key (#), (NON-ADD), (PRINT ONLY), (N), (NA), or (◁).
   c. Depress the plus (+) bar, if necessary.
   d. Operate the plus (+) bar to leave a space after the number.
3. **ADD-LIST PROBLEMS 1-5** by the touch method.
4. **NON-ADD ITEMS** followed by "N" in Problems 6-10 by:
   a. Depressing the keys for the number.

1	2	3	4	5
150.53	140.94	112.10	190.40	131.30
33.20	20.66	99.50	85.50	10.70
244.08	250.44	245.04	290.04	211.00
40.74	88.20	22.09	44.44	42.00
340.64	353.50	388.10	327.10	360.70
88.40	90.66	96.09	33.80	19.00
450.77	444.90	480.44	499.04	420.80
92.09	77.05	90.11	65.60	20.90
544.90	510.44	569.60	566.10	570.50
70.67	99.20	44.01	55.10	23.00
614.10	670.99	622.30	633.01	616.00
80.11	20.88	41.01	41.01	22.80

6	7	8	9	10
126.46	101.67	100.28	104.11	106.66
11.06	75.57	41.44	88.75	22.76
4.68	269.58	.43N	262.69	200.08
309.95	55.83	302.07	6.06N	42.30
95.75N	389.05	58.67	335.23	350.13
9.62	4.86N	8.57	36.94	3.18N
414.77	440.16	410.00	404.94	413.99
.02	36.19	94.83N	.46	12.56
31.52N	508.25	522.86	500.06	559.98
688.23	49.20	16.56	86.66N	7.37
7.35	.36N	.07	65.35	38.51N
.94	51.07	61.36	4.49	64.60

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



Tape from a Monroe Ten-Key Adding Listing Machine

11 10

JOB NO. 3 / CONTINUED

11	12	13	14
144.44	141.45	104.07	204.01
205.55	205.56	205.08	205.02
406.66	566.65	706.09	306.03
304.47	305.54	404.70	104.70
705.58	704.47	805.80	805.20
606.69	805.58	906.90	906.30
407.77	906.69	704.40	704.40
508.88	407.44	805.50	805.50
609.99	508.55	306.60	306.60
704.41	609.06	407.50	401.10
805.52	407.45	502.20	603.33
306.63	408.56	609.90	603.30

ANSWERS

11. $716.59
12. $977.00
13. 6468.74
14. $955.49

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3	4
803.87	1.07	.52	.88
1.73	42.29	163.90	452.72
302.18	224.68	772.45	20.04
52.03	622.48	51.98	12.00
791.95	3.32	1.66	211.74
43.90	72.93	15.28	5.76
9.49	86.29	5.23	33.10
405.08	7.51	145.47	369.17
8.03	9.82	40.41	96.63
50.18	.85	9.91	90.08
7.01	5.61	.64	.37
785.33	17.59	729.79	496.52
.68	.67	117.61	663.36
2.03	5.47	10.91	65.19
3,263.49	1,100.58	2,065.76	2,517.56

5	6
32.15	125.92
−4.61	−32.06
27.54	93.86

7	8
132.30	295.88
−37.98	−74.07
94.32	221.81

12

3 TOUCH ADDITION AND NON-ADD KEY

b. Depressing the non-add key.
c. Depressing the plus (+) bar, if necessary.
d. Add-list the other items as usual.

5. DO EACH PROBLEM TWICE, as usual.
a. Record the answers in the spaces provided.

6. COMPLETE THE TIMED DRILL.
a. Fill in the information requested on the timed drill form. See Job No. 2 for detailed instructions, if necessary.
b. Use Grading Scale No. 1 on page 187 to determine your grade.
c. If time permits, do the Timed Drill again.
d. Record your best grade on the Achievement Chart on page 188.

7. ATTACH TAPES to the left side of the job sheet, and give the completed job to your instructor.

ON THE JOB

Good posture fights fatigue.

Maintain good posture while operating your machine.

4 MULTIPLICATION AND REPEAT ADDITION

JOB NO. 4
MULTIPLICATION AND REPEAT ADDITION

Name _____ No. of Errors ____
Period _____ Date _____ Rating ____

AIM:

To demonstrate the use of the repeat (R) or multiplication (×) keys to multiply and to repeat-add.

PROCEDURE

1. **CLEAR MACHINE.**
2. **NUMBER EACH PROBLEM** by using the non-add key.
3. **MULTIPLY** by following the steps listed below for solving Problem 1.
   a. Depress the keys for the multiplicand, 456.
   b. Latch down the repeat (R) key, and depress the plus (+) bar five times for the figure 5 in the multiplier 35. If your multiplication (×) key is "live," hold it down until the machine registers five times.
   c. Depress the zero bar to move 456 one column to the left. It will now be in alignment with the multiplying unit 3.
   d. Depress the plus (+) bar or hold down the "live" multiplication (×) key until the machine registers three times for the figure 3 in the multiplier 35.
   e. Operate the clear key or lever, and take a total as usual. The product should be 15,960.
   f. If the multiplier contains more than two digits, depress the zero bar once for each additional digit and multiply as indicated above.

1	456 × 35	15960	6	145 × 6.59	955.55
2	123 × 37	4,551	7	946 × 9.18	8,684.28
3	375 × 42	15,750	8	259 × 1.24	321.63
4	498 × 31	15,438	9	489 × 3.79	1,853.31
5	256 × 425	108,800	10	148 × 4.32	639.36

In recording the answers for Problems 1 through 5, ignore the printed decimal point. Because there are two decimals in the multipliers of Problems 6 through 10, the printed decimal is part of the answer and must be recorded.

11	12	13	14	15
474.80	609.45	795.48	882.74	47.52
474.80	609.45	795.48	882.74	47.52
474.80	609.45	795.48	882.74	47.52
474.80	822.04	795.48	882.74	84.25
474.80	822.04	946.18	882.74	84.25
343.50	822.04	946.18	375.25	84.25
343.50	822.04	946.18	375.25	84.25
343.50	822.04	145.37	375.25	84.25
916.20	178.50	145.37	486.02	84.25
916.20	178.50	145.37	486.02	19.67
916.20	178.50	145.37	486.02	19.67
916.20	178.50	145.37	486.02	19.67
7069.30	6652.55	6747.31	7483.23	707.07

ANSWERS

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____
8 _____
9 _____
10 _____
11 _____
12 _____
13 _____
14 _____
15 _____

13

JOB NO. 4 / CONTINUED

16	17	18	19
20.25	30.31	97.92	89.42
59.04	11.23	60.85	92.61
76.24	47.66	33.40	21.65
48.52	84.53	16.49	92.70
54.60	81.25	95.40	96.76
45.61	63.33	15.06	92.57
21.75	56.25	58.71	68.62
32.55	21.67	50.97	82.61
62.73	38.75	13.20	21.92
49.56	56.25	23.77	23.74
18.37	59.01	60.34	73.54
32.71	93.75	62.27	62.81

ANSWERS

16 _____

17 _____

18 _____

19 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3	4
7.38	4.82	5.09	2.02
8.25	1.47	1.80	5.90
7.86	8.83	2.10	7.62
5.16	5.12	7.40	4.85
6.17	6.91	3.02	5.46
2.93	1.49	9.09	4.56
4.83	2.64	6.08	2.17
4.29	5.36	4.50	3.25
2.67	1.74	5.07	6.27
7.38	7.24	1.20	4.95
6.23	3.24	5.08	7.35
2.18	9.41	4.07	3.27
4.95	2.61	6.70	2.76
1.97	6.00	2.01	1.25
72.25	66.88	63.21	61.68

14

5. 689 × 589 405,821

6. 948 × 163 154,524

7. 312 × 753 234,936

8. 432 × 351 151,632

9. 727 × 856 622,312

10. 131 × 465 60,915

11	12
837.56	961.08
−57.29	−126.50
780.27	834.58

4 MULTIPLICATION AND REPEAT ADDITION

g. Note that the multiplication principle is the same as the handwritten form. The zero bar is used for proper column alignment.

4. COMPLETE PROBLEMS 2-10 following the procedure outlined above.

5. REPEAT-ADD the items in Problem 11:

a. Using the touch method, depress the keys for 474.80.

b. Latch down the repeat (R) key.

c. Depress the plus (+) bar five times, or hold down the "live" multiplication (×) key for five motor revolutions — the number of times the same number is listed in the problem.

d. Operate the correction key or lever to clear the number out of the machine.

e. Follow the same procedure for all numbers that are repeated. Be sure to clear the number out of the machine before you depress the keys for the next number or take a total.

6. DO PROBLEMS 12-15 following the same procedure.

7. DO PROBLEMS 16-19 for a review of touch addition.

8. COMPLETE THE TIMED DRILL using the procedure followed in the previous jobs.

a. Use Grading Scale No. 2 on page 187 to determine your grade.

b. If time permits, do the Timed Drill again.

c. Record your best grade on the Achievement Chart on page 188.

9. ATTACH TAPES to the left side of this job sheet, and give your completed job to the instructor.

5 TOUCH ADDITION — REINFORCEMENT

JOB NO. 5
TOUCH ADDITION — REINFORCEMENT

Name _____ No. of Errors ____
Period _____ Date _____ Rating _____

AIMS:

1. To review the principles and procedures presented in the previous jobs.
2. To develop speed and accuracy in the use of the touch method.

PROCEDURE

1. **CLEAR MACHINE,** and use the non-add key to number each problem.
2. **ADD,** by the touch method, the items in Problems 1 and 2, and non-add those items followed by an "N."
   a. Depress the keys for the figures in the number as usual.
   b. Depress the non-add key, and operate the plus (+) bar. On some machines, the non-add key is "live" and therefore does not require the use of the plus (+) bar.
3. **COMPLETE PROBLEMS 3-11** using the procedures outlined for Jobs 1 through 4.
4. **COMPLETE THE TIMED DRILL** following the procedures used in previous jobs.
   a. Use Grading Scale No. 2 on page 187 to determine your grade.
   b. If time permits, do the Timed Drill again.
   c. Record your best grade on the Achievement Chart on page 188.

1	2	3	4	5
1,533.02	7,026.89	681.09	9.65	19.17
19.67N	5,917.35	5,992.53	184.94	3,748.59
4,977.86	838.23	9,569.70	8,712.80	964.60
8,567.06	.50	802.26	263.27	2.67
28.33	4.10N	903.41	6,748.82	1,947.85
.74	2,252.06	8.57	59.84	51.28
.22	.66	771.94	324.97	292.93
9.14	578.70	4,085.31	4,747.16	5,348.51
8.06	8,719.25	7.32	9.65	37.07
7,753.91	2,407.21	9,834.21	34.26	3,982.55
2,939.65	19.67	989.05	85.71	26.97
.18	8.35	427.26	4,345.85	4,361.75
51.96	4.68	.66	5.34	369.50
2,108.94	.31	578.80	.05	19.88
.72	844.89	2,407.21	17.42	6.75
.49N	3.94	56.36	786.91	9,652.00
4.70	1,329.92	.96	1,475.38	206.50
51.12	809.71N	4.74	939.06	87.90
1,064.74	5,041.42	5,586.63	252.97	9.38
51.96	4,603.05	131.96	1.29	5.32
2,108.94	.95	.73	5.89	4,455.71
1,637.18	2.96	638.35	8,709.57	6,692.75
45.54	469.45	910.64	4.73	258.79
4.30	322.73	57.22	6.45	382.31
2,765.57	3,929.07	9.62	9,939.24	67.56
2,894.20	7.30	9.46	8,171.74	6.03
576.23	8,594.98	17.37	1.59	8.41
5.08	9,619.52	6.78	8.74	379.41
9,461.66	1.44	409.04	1,381.62	.68
83.23	.59	871.57	1,767.98	3.19
.51	5,944.94	5,225.31	3,946.21	934.42

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____

15

6	7	8
1,286.29 —531.08	4,806.92 —916.91	5,138.94 —274.18

9	10	11
452.90 —74.49	1,076.22 —284.50	5,114.20 —950.61

TIMED DRILL

1	2	3
27.69	1,018.25	531.57
6,281.37	44.96	7,689.40
525.19	1,530.57	60.28
5,375.92	699.14	8,459.35
9,716.26	5,806.28	.05
.01	3.92	47.80
3.45	34.07	5,415.20
1,877.74	35.80	3.75
42.55	6,435.20	1,875.62
118.25	21.60	23.89
1.47	664.81	840.46
7,699.14	48.30	3,421.80
6,435.20	4,893.78	41.25
38,104.24	21,236.68	28,410.42

ANSWERS

6 _____

7 _____

8 _____

9 _____

10 _____

11 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

4 1926 × 291 560,466

5 5407 × 678 3,665,946

6 1599 × 1237 1,977,963

7 2347 × 35 82,145

8 3805 × 4831 18,381,955

9 852 × 39 33,228

10 1463 × 135 197,505

11 4967 × 1134 5,632,578

12 9304 × 844 7,852,576

16

5 TOUCH ADDITION — REINFORCEMENT

5. ATTACH TAPES to the left side of this job sheet, and give the completed job to your instructor.

NOTE: Before proceeding to Job No. 6, ask your instructor about Test No. 1. He may want you to complete it before you start Job No. 6.

ON THE JOB

The touch system is faster.

Develop the touch system on machines where this is desirable.

6 CREDIT BALANCES AND ZEROS IN MULTIPLIERS

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 6
CREDIT BALANCES AND ZEROS IN MULTIPLIERS

Name _____ Period _____ Date _____

No. of Errors ____ Rating _____

AIMS:

1. To develop an understanding of the procedure followed to get credit balances.
2. To develop facility in working with zeros in multipliers.

PROCEDURE

1. **CLEAR MACHINE** and number each problem.
2. **SOLVE PROBLEM 1** by following this procedure:
   a. By touch, depress the keys for 341.85, and depress the plus (+) bar.
   b. Enter the number to be subtracted, 673.75, and depress the subtract (—) key.
   c. If necessary, operate the plus (+) bar.
   d. Take a total as usual. If your machine has a credit balance feature, the total, 331.90, will be labeled "Cr.," "C," or (—). Record your answer as 331.90 Cr. On some machines, a credit balance symbol, "Cr.," "C," or "—," will print when you depress the total key to clear the machine.
   e. If your machine does **not** have a credit balance feature, the total will be 999,668.10. Depress the keys for the negative balance, 999,668.10, and operate the subtraction (—) key using the plus (+) key, if necessary. Take a total again to get the true credit balance of 331.90, and record your answer as 331.90 Cr.
3. **DO PROBLEMS 2-10** in the above manner.

1	2	3	4	5
341.85	138.94	734.07	286.29	806.92
—673.75	—274.18	—981.30	—531.08	—916.91
331.90 Cr	135.24 Cr	247.23 Cr	246.79 Cr	109.99 Cr

6	7	8	9	10
495.50	346.22	232.90	145.65	167.85
—701.00	—406.37	—507.49	—218.70	—409.25
205.50 Cr	60.15 Cr	274.59 Cr	73.05 Cr	241.40 Cr

11	12	13	14	15
11.80	102.30	2.43	17.15	.51
28.54—	256.57	5.38	118.40	8.96
6.71	872.90—	150.31—	538.07—	417.45
17.91	156.22	1.62	65.62	.63
12.12	56.32—	1.78—	284.25	8,205.60—
6.12—	7.49	3.03	8,703.52—	72.70
1.76	26.37—	2.37	919.67	5.44
14.68—	678.47—	8.29—	3.06—	.12
36.26—	95.04	27.69—	87.27	6.01
56.47—	517.34—	3.34	946.80—	17.25—
91.27 Cr	1533.78 Cr	169.90 Cr	8699.09	7714.03 CR

16 410 × 503 206,230

17 4290 × 720 3088800

18 2708 × 409 1,107,572

19 4030 × 305 1,229,150

ANSWERS

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____
8 _____
9 _____
10 _____
11 _____
12 _____
13 _____
14 _____
15 _____
16 _____
17 _____
18 _____
19 _____

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 6 / CONTINUED

20	21	22
65.25 −193.75	21.65 −157.80	19.17 −313.89

23 7102 × 8041 _____

24 8901 × 7450 _____

25 2045 × 1056 _____

26 3904 × 407 _____

TIMED DRILL

1	2	3
81.58	11.70	421.92
7,479.94	512.30	1,132.01
189.12	4,651.33	55.89
120.93	2,632.42	2,707.52
55.05	33.03	86.20
601.86	1,823.17	104.25
26.75	4.20	5,491.00
135.66	5,658.57	21.93
88.35	24.29	3,012.26
186.76	7,464.30	941.34
1,431.54	401.17	2,672.17
31.43	9,802.61	142.43
7,120.19	291.01	135.08
131.38	149.48	21.91
17,680.54	33,459.58	16,945.91

ANSWERS

20 _____

21 _____

22 _____

23 _____

24 _____

25 _____

26 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

4	5
29.27 −177.64	158.07 −187.92
148.37 Cr.	29.85 Cr.

18

6	7
32.53 −281.09	53.18 −171.94
248.56 Cr.	118.76 Cr.

8 458 × 560 256,480

9 134 × 407 54,538

10 846 × 450 380,700

6 CREDIT BALANCES AND ZEROS IN MULTIPLIERS

4. COMPLETE PROBLEMS 11-15 by following the steps listed below for solving Problem 11.

a. By touch, add the items that are not followed by a minus (—) sign, and subtract those that are.
b. Take a total as usual.
c. On machines without a credit balance feature, follow Step 2 (e) to get the answer, 91.77 Cr.

5. COMPLETE PROBLEMS 16-19 following the usual multiplication steps.

a. If there is a zero in the multiplier, apply this rule:
   (1) Depress the zero bar **once for end zeros** in the multiplier.
   (2) Depress the zero bar **twice for any other single zero** in the multiplier. (The zero bar is depressed once for column alignment, and once for the zero multiplier.)

6. COMPLETE THE TIMED DRILL following the procedures used in the previous jobs.

a. Use Grading Scale No. 2 on page 187 to determine your grade.
b. If time permits, do the Timed Drill again. Record your best grade on the Achievement Chart on page 188.

7. ATTACH TAPES to the left side of the job sheet, and give the completed job to your instructor.

7 RECIPROCAL DIVISION

JOB NO. 7
RECIPROCAL DIVISION

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIMS:

1. To develop an understanding of the steps followed in reciprocal division.
2. To review principles and procedures presented to date.

HIGHLIGHTS

Standard ten-key adding listing machines are not designed for direct division. To divide on ten-key machines, one must multiply the number to be divided, the dividend, by the reciprocal of the divisor. The **reciprocal** of a number is the answer obtained by dividing 1 by that number. For example, the reciprocal of 200, the divisor in problem 1, is .005 (1 ÷ 200 = .005).

To facilitate the division process, the reciprocal of the divisor will be listed under each division problem.

PROCEDURE

1. **CLEAR MACHINE,** and number each problem.
2. **SOLVE PROBLEM 1** by touch depressing the keys for the dividend, 1729. Latch down the repeat key, if necessary.
3. **MULTIPLY BY RECIPROCAL** of 200, the divisor. The reciprocal, .005, is listed under the problem.
4. **MULTIPLY BY EXTREME RIGHT-HAND FIGURE,** 5. Since the other two figures are zeros, you do not have to multiply by any other figure.
5. **TAKE A TOTAL.** The answer printed on the tape will be 86.45. Ignore the automatically printed decimal point.

			ANSWERS
1	1729 ÷ 200 8.65 (divisor) Reciprocal .005	11 184 ÷ 80 2.30 Reciprocal .0125	1
2	750 ÷ 25 30.00 Reciprocal .04	12 316 ÷ 40 7.90 Reciprocal .025	2
3	4178 ÷ 500 8.36 Reciprocal .002	13 9436 ÷ 800 11.80 Reciprocal .00125	3
4	832 ÷ 40 20.80 Reciprocal .025	14 676 ÷ 200 3.38 Reciprocal .005	4
5	972 ÷ 20 48.60 Reciprocal .05	15 3152 ÷ 500 6.30 Reciprocal .002	5
6	264 ÷ 80 3.30 Reciprocal .0125	16 876 ÷ 20 43.80 Reciprocal .05	6
7	2692 ÷ 400 6.73 Reciprocal .0025	17 7188 ÷ 400 17.97 Reciprocal .0025	7
8	7848 ÷ 800 9.81 Reciprocal .00125	18 531 ÷ 50 10.62 Reciprocal .02	8
9	867 ÷ 50 17.34 Reciprocal .02	19 2769 ÷ 250 11.08 Reciprocal .004	9
10	2719 ÷ 250 10.88 Reciprocal .004	20 182 ÷ 25 7.28 Reciprocal .04	10
	2719 X .004	19	11
			12
			13
			14
			15
			16
			17
			18
			19
			20

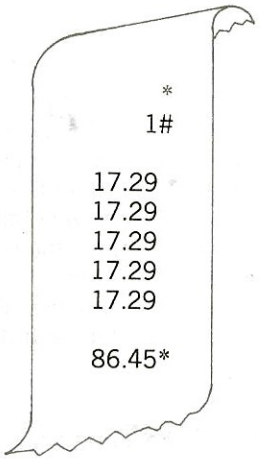
JOB NO. 7 / CONTINUED

				ANSWERS
21	775 ÷ 25 3100 Reciprocal .04	31	6,349 ÷ 52 122.10 Reciprocal .01923076	21
22	384 ÷ 24 16.00 Reciprocal .04166666	32	4,381 ÷ 14 31300 Reciprocal .07142857	22
23	714 ÷ 42 17.00 Reciprocal .02380952	33	14,648 ÷ 349 42 ~~.4197~~ .00 Reciprocal .00286533	23
24	5,216 ÷ 32 163.00 Reciprocal .03125	34	363 ÷ 14 _____ Reciprocal .07142857	24
25	48,688 ÷ 136 358,0006 Reciprocal .00735294	35	9,475 ÷ 70 135.36 Reciprocal .01428571	25
26	884 ÷ 13 6800 Reciprocal .07692307	36	9475 X .0142857 1 347 ÷ 34 _____ Reciprocal .02941176	26
27	396 ÷ 36 11.00 Reciprocal .02777777	37	2,127 ÷ 83 _____ Reciprocal .01204819	27
28	6,536 ÷ 43 152.00 Reciprocal .02325581	38	438 ÷ 9 _____ Reciprocal .11111111	28
29	23,622 ÷ 62 381.00 Reciprocal .01612903	39	8,525 ÷ 138 _____ Reciprocal .00724637	29
30	74,844 ÷ 324 23100 Reciprocal .00308642	40	3,020 ÷ 19 _____ Reciprocal .05263158	30
			20	31
				32
				33
				34
				35
				36
				37
				38
				39
				40

7 RECIPROCAL DIVISION

6. COUNT DECIMAL PLACES in the reciprocal. There are three in .005. Point off three places in the answer, 8.645. Round it off to two places, and record the answer as 8.65.

The following is a machine tape for Problem 1.



7. BEGIN MULTIPLYING with the fifth figure, counting from the decimal, if the capacity of your machine makes it impossible to use every figure in the reciprocal.

a. Point off five places in the answer, but record it to the nearest **whole** number.

b. The answer to Problem 31 would be 122.09127. Record it as 122. (The accuracy of the decimals cannot be depended upon because only five of the eight decimals were used.)

RECIPROCAL DIVISION

8. **USE ALL FIGURES** in the reciprocal, if the capacity of your machine makes it possible. Your answer to Problem 31 would be 122.09609524. Because you used all the figures in the reciprocal, you can round off the answer to two decimals. Record it as 122.10.

9. **COMPLETE REMAINING DIVISION PROBLEMS** using the procedures outlined above.

10. **SOLVE REVIEW PROBLEMS** on pages 21 and 22, Problems 1-23.

11. **COMPLETE THE TIMED DRILL** following the procedure used in the previous jobs.
    a. Use Grading Scale No. 2 on page 187 to determine your grade.
    b. If time permits, do the Timed Drill again. Record your best grade on the Achievement Chart on page 188.

12. **ATTACH TAPES** to the left side of the job sheets, and give the completed job to your instructor.

ON THE JOB

Concentrate when you work.

Inaccuracies result from inattention.

7 RECIPROCAL DIVISION

In business transactions, you may be called upon to use the ten-key adding listing machine for reciprocal division. It is, therefore, important that you have knowledge of this procedure. Basically, however, the ten-key functions as an adding and multiplication machine.

(1) In accounting departments, the ten-key is used for income statements, payroll sheets, or cost analysis.

(2) In banks or building and loan companies, tellers use the ten-key to insure accuracy of figure calculations.

(3) In the field of sales, the ten-key is used for sales listing sheets or sales reports.

The ten-key operator can find career opportunities in a variety of business offices.

ADVERTISING AGENCY
We need a high school graduate who can meet the public, use the telephone properly, and can operate a ten-key adding machine. Good starting salary, good company, good job. Call Mr. Evans, 701-6000.

ACCOUNTING CLERK
High school grad. No experience necessary. Typing and use of adding machines essential. Liberal fringe benefits, parking lot, cafeteria on premises. Call 231-5085.

FIGURE CLERKS
High school graduate needed to handle invoice computations. Must be able to operate 10-key adding machine efficiently. Good starting salary and promotions. Mr. Williams 317-6016

ACCOUNTING CLERKS
Cincinnati Machines Corp. needs several sharp girls to work in various sections of the Accounting Dept. Must be high school graduate. Must be able to operate 10-key adding machine, typing helpful for some positions. Salary commensurate with ability and experience. Pleasant air-conditioned office, employee profit sharing, other benefits.
Cincinnati Machines Corp.
1621 Main St. Apply in person.

22

8

SUBTOTAL

JOB NO. 8
SUBTOTAL

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To develop an understanding of the use of the subtotal key.

HIGHLIGHTS

The subtotal key or bar is used to determine the total of the items listed up to a certain point without clearing the machine. Possible functions include: (1) determining a sequence of balances for a company statement, or (2) determining a transfer of totals for a payroll sheet, inventory form, etc.

PROCEDURE

1. **CLEAR MACHINE,** and number each problem.
2. **DEPRESS KEYS** for items up to the heavy line by the touch method.
3. **TAKE A SUBTOTAL** at the point in each problem indicated by a heavy line and a space followed by the letter "S."
   a. The subtotal key is marked with an "S," "+S," "SUB TOTAL," "•ST," "ST," " ," or "COR SUB."
   b. Depress the subtotal key and the plus (+) bar, if necessary.
   c. On some **Remington Rand** machines, depress the plus (+) bar, hold down the subtotal key, and depress the plus (+) bar again.
   d. The subtotal is identified on the tape by an "S" or by some other special symbol. On some machines, it is printed in red.

Tape for Problem 1 on a Monroe

	1	2	3	4
*	599.02	123.33	3,824.05	30.30
	103.00	46.52	7.21	843.29
	474.50	3,761.05	146.30	1,565.00
	890.25	371.10	43.65	3.44
	67.17	28.15	1,437.08	127.02
	511.56	2,523.50	118.90	94.40
1#	563.31	1,317.93	31.79	6,131.79
	395.06	2.51	83.54	83.54
599.02		146.74		36.93
103.00	S	42.70	S	473.15
474.50	859.28	1,662.13	480.71	3,256.05
890.25	394.95	15.75	7,150.03	32.20
67.17	357.90		1,014.25	315.56
511.56	331.97	S	6.27	2,925.70
563.31	32.60	3,337.25	148.53	
395.06	6.59	8,105.00	63.40	S
3,603.87S	13.30	56.45	240.01	361.98
859.28	407.36	7.20	469.35	15.67
394.95	515.70	135.47	37.99	171.10
357.90	142.87	70.02	32.51	42.81
331.97	28.67	5,318.96	262.50	1,640.19
32.60	85.56	432.38	2,740.28	140.26
6.59	480.41	25.97	338.25	32.69
13.30	106.70	412.90	4.26	810.24
407.36	1.22	32.08	154.30	1,670.74
515.70	43.90	335.50	42.76	12.36
142.87	387.75	29.75	1,529.50	6.67
28.67	44.77	259.28	18.14	2,309.52
85.56				
480.41				
106.70				
1.22				
43.90				
387.75				
44.77				
7,845.37*				

ANSWERS

S _____
1 _____
S _____
2 _____
S _____
3 _____
S _____
4 _____

JOB NO. 8 / CONTINUED

5

35.75	16.94	194.05
55.37	29.05	295.83
36.56	66.35	175.78
27.65	77.33	358.12
68.24	15.95	777.48
76.07	87.05	260.61
51.59	64.82	543.60
45.92	59.06	452.31
65.70	63.74	716.30
98.02	42.95	253.75
39.80	91.73	229.70
95.42	58.03	205.06
79.13	40.62	534.87
46.50	37.55	896.70
_____ S	_____ S	_____
		_____

ANSWERS

S _____

S _____

5 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

_____ minutes

Subtract _____ required

TIMED DRILL

1	2	3
82.64	28.46	409.14
79.13	97.31	574.80
24.08	52.67	267.09
50.92	56.09	101.71
54.29	16.60	953.28
19.56	43.67	542.40
90.74	63.92	375.38
78.32	76.07	247.06
68.42	17.48	670.64
84.80	79.22	439.07
13.97	31.88	271.33
57.08	44.93	770.87
703.95	608.30	5,622.77

24 = 24

4	5
1,802.26	8,569.70
−834.18	−173.07
968.08	8,396.63

6 3775 × 209 788,975

7 2855 × 148 422,540

8 8235 ÷ 24 343.13 *
Reciprocal .04166666

9 8475 ÷ 32 264.84
Reciprocal .03125

* 343. for machines with limited capacity.

8 SUBTOTAL

4. **COMPLETE PROBLEMS 1-4,** recording the subtotals and the totals in the spaces provided.
5. **TAKE A SUBTOTAL** at the end of the first two columns of numbers in Problem 5. At the end of the third column take a total.
6. **COMPLETE THE TIMED DRILL,** and follow the procedure used in the previous jobs.
   a. Use Grading Scale No. 2 on page 187 to determine your grade.
   b. If time permits, do the Timed Drill again. Record your best grade on the Achievement Chart on page 188.
7. **ATTACH TAPES** to the left side of the job sheet, and give the completed job to your instructor.

ON THE JOB

Write figures legibly.

Errors result from poor handwriting.

9 SALES REPORTS

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 9 SALES REPORTS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To present a practical application of horizontal and vertical touch addition.

PROCEDURE

To complete the WEEKLY SALES REPORT:

1. **CLEAR MACHINE,** and number each tape.
2. **ADD VERTICALLY** the sales made on Mon., and record the total in the space provided.
3. **ADD THE SALES** for Mon. again, and place a check mark (✓) under the correct total to indicate that its accuracy has been verified.
4. **FIND AND VERIFY THE TOTALS** for the sales in the vertical columns headed **Tues., Wed., Thurs., Fri.,** and **Sat.** as you did for the column for **Mon.**
5. **ADD THE DEPARTMENT SALES** by the touch method for Dept. 101 listed horizontally on the first line of the WEEKLY SALES REPORT. Record the total in the space provided at the right of the line.
6. **VERIFY THE TOTAL** by adding it a second time.
7. **FIND AND VERIFY THE TOTALS** of the departmental sales for the remaining departments. Follow the procedure outlined for Dept. 101.
8. **ADD THE HORIZONTAL TOTALS** listed in the last column, and record the total in the last space provided at the right of the line labeled "Totals."

WEEKLY SALES REPORT — WEEK OF MARCH 3, 19__

Dept.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total
101	22.13	14.38	10.63	15.26	36.25	236.17	
102	16.89	98.31	12.37	21.39	15.14	271.75	
103	16.35	63.25	16.10	17.85	41.59	289.13	
104	13.22	11.24	11.18	16.97	83.73	248.25	
105	11.86	47.23	12.16	25.65	66.35	152.56	
106	17.47	84.34	12.12	19.52	59.43	436.81	
107	16.67	20.25	38.73	29.43	30.31	435.50	
108	16.44	59.04	14.88	12.16	11.23	360.87	
109	16.48	76.24	29.79	19.89	47.66	658.55	
110	17.06	48.52	13.02	13.02	12.12	737.49	
111	20.17	54.60	14.66	18.34	81.25	443.98	
112	21.55	45.61	15.74	21.86	63.33	119.25	
113	18.34	21.75	16.11	16.42	56.25	149.30	
114	19.83	32.55	17.29	15.30	21.67	467.75	
115	19.89	62.73	14.23	20.19	38.75	244.65	
116	17.85	49.56	17.79	17.26	56.25	263.91	
117	22.19	73.54	16.86	24.88	18.25	551.87	
118	21.63	32.71	13.87	13.72	93.75	285.30	
119	20.43	27.68	15.82	15.67	76.67	249.95	
120	23.61	31.25	24.14	25.95	41.25	810.50	
Totals	1160.86						

JOB NO. 9 / CONTINUED

1	2	3
189.72	195.01	170.81
265.30	241.24	273.85
143.27	964.93	905.75
827.39	872.86	401.27
764.95	213.17	192.87
515.77	407.34	576.95
420.45	974.10	498.71
340.84	154.98	779.86
971.57	604.13	104.59
262.05	834.04	504.25
183.89	492.40	235.45
439.52	258.09	998.32

ANSWERS

1. _____
2. _____
3. _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

Weekly Sales — Week of March 10, 19__

Dept.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total
A	50.51	51.41	26.85	671.29	749.68	105.61	1,655.35
B	70.49	70.89	70.19	850.41	970.79	530.92	2,563.69
C	87.75	49.07	59.07	943.17	850.73	153.86	2,143.65
D	50.98	50.20	44.56	395.04	447.29	894.13	1,882.20
E	94.54	34.55	71.24	275.09	797.43	602.51	1,875.36
F	57.87	51.34	12.51	198.44	617.58	857.05	1,794.79
G	84.59	60.91	74.58	472.05	825.74	978.14	2,496.01
H	43.15	47.23	99.15	817.15	152.06	710.96	1,869.70
I	16.45	39.08	88.69	117.52	145.41	680.27	1,087.42
J	28.50	15.24	27.45	214.98	531.09	384.25	1,201.51
Totals	584.83	469.92	574.29	4955.14	6087.80	5897.70	18,569.68

25 26

9 SALES REPORTS

9. **PROVE ACCURACY** of all the additions by:
   a. Adding the totals of the vertical additions under the last column, "Total."
   b. Checking this total against the total of the horizontal additions of departmental sales under the last column, "Total". They should be the same.
10. **COMPLETE REMAINING PROBLEMS.** Add Problems 1-3.
11. **COMPLETE THE TIMED DRILL.**
    a. Use the touch method to add each of the seven columns of figures vertically.
    b. Use Grading Scale No. 3 on page 187 to determine your grade.
    c. If time permits, do the Timed Drill again. Record your best grade in the Achievement Chart on page 188.
12. **ATTACH TAPES** to the left side of the job sheet, and give the completed job to your instructor.

ON THE JOB

Accuracy is important.

Seemingly unimportant errors have cost jobs and caused bankruptcy.

10 REVIEW

TOUCH-OPERATED, TEN-KEY ADDING LISTING MACHINE

JOB NO. 10
REVIEW

Name _____
Period _____ Date _____
No. of Errors _____ Rating _____

Time Completed _____
Time Started _____
Minutes Required _____

AIMS:

1. To review the operating principles presented in Job Nos. 1 through 9.
2. To determine the proficiency acquired in the operation of ten-key adding listing machines.

PROCEDURE

1. **CLEAR MACHINE,** and number each problem.
2. **DO EACH PROBLEM** only once. Record the answer directly below or beside each problem, and in the Answers column at the right. (Note that Problem 20 should be solved as a one-column addition problem.)
3. **RECORD TIME** the job was started, the time it was completed, and the number of minutes required to complete the job in the spaces provided. In recording the time, drop fractions of a minute smaller than ½. Fractions larger than ½ minute but less than one full minute are recorded as ½ minute. Subtract to get the time required for completion of the job.
4. **DO JOB AGAIN,** if you have the time. Try to improve your speed.
5. **ARRANGE THE TAPES** in numerical order, and attach them to the upper left corner of the job sheet.
6. **WRITE YOUR NAME** and other information required in the spaces provided at the upper center of the job sheet.
7. **GIVE JOB TO INSTRUCTOR** when completed.

1	2	3	4	5
6.35	4.59	51.15	264.11	4,231.69
2.77	7.16	83.26	412.68	9,280.12
6.63	3.87	13.42	928.22	8,628.35
5.40	9.34	82.71	318.55	1,379.21
3.72	6.12	24.10	543.02	5,264.42
4.26	3.29	68.35	350.28	8,704.59
9.53	3.58	10.00	982.10	3,315.62
5.69	9.02	86.35	412.36	2,685.03
1.38	1.59	12.04	864.22	3,104.29
3.21	6.05	25.19	526.17	3,321.23
3.17	2.16	31.25	714.04	5,960.67
5.02	3.41	13.64	450.45	3,121.42
7.45	6.25	42.32	321.98	9,672.23
6.13	5.64	59.40	540.66	2,021.46
2.15	2.08	17.26	231.25	3,482.15
5.51	1.41	83.49	159.07	2,150.08
6.22	5.26	64.05	642.14	2,793.16
5.78	7.04	10.00	143.39	7,383.01
4.05	5.28	64.50	190.19	1,320.25
1.58	3.52	73.53	503.25	3,750.65
5.90	5.12	42.61	309.27	4,327.10
3.64	2.75	52.37	150.54	3,876.26
6.82	9.14	60.58	365.33	7,695.24
5.41	2.09	54.06	507.51	1,327.42
3.58	4.70	35.75	260.25	2,475.76

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____

JOB NO. 10 / CONTINUED

6	7	8	9	10	11
3.30	160.73	460.72	16.14	19.30	306.19
−1.17	−40.34	−71.26	−9.94	−36.40	−568.55

12 496 × 140 _____

13 306 × 619 _____

14 268 × 862 _____

15 232 × 207 _____

16 495 ÷ 25 _____
(Reciprocal .04)

17 660 ÷ 80 _____
(Reciprocal .0125)

18 1800 ÷ 500 _____
(Reciprocal .002)

19 445 ÷ 40 _____
(Reciprocal .025)

20				
	4,190.19	9,672.23	2,310.64	3,421.29
	1,032.47	2,021.46	2,134.13	5,072.43
	2,503.24	482.15	903.25	313.06
	128.23	50.08	37.56	52.18
	.08		.09	
	1.75	S	1.90	S
	6,390.27	213.16	6,709.20	211.75
	2,150.54	7,383.01	2,317.63	3,412.07
	63.33	1,320.25	33.64	4,125.38
	507.51	50.65	152.41	31.55
	4,231.69	372.10	8,236.25	203.27
	.43	3,876.26	.63	6,969.61
	9,120.12	.24	5,681.09	.25
	.05	1,327.42	.06	7,878.53
		.06		.07
	S	132.47	S	507.94
	628.35	7,628.23	304.31	1,875.23
	1,379.21	97.03	2,793.42	19.86
	21.43	.64	41.34	1.85
	.25	.05	.47	.03
	1.04	25.85	1.03	
	67.75	.04	26.24	

ANSWERS

6 _____
7 _____
8 _____
9 _____
10 _____
11 _____
12 _____
13 _____
14 _____
15 _____
16 _____
17 _____
18 _____
19 _____
S _____
S _____
S _____
S _____
20 _____

10 REVIEW

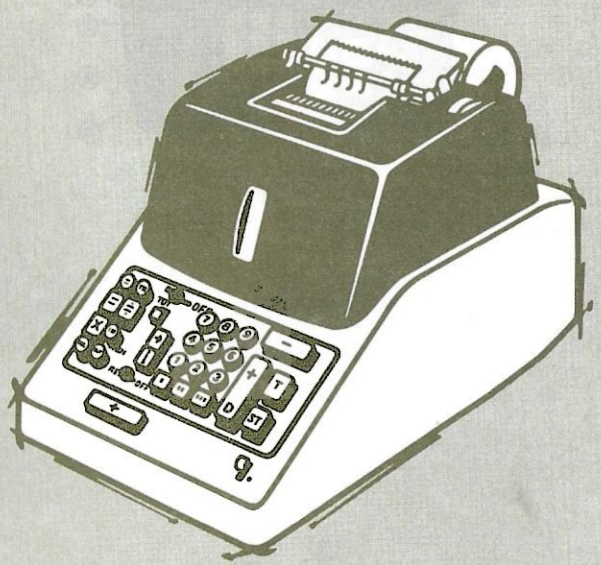
NOTE: Before proceeding to the next job, ask your instructor about Test No. 2. Test Nos. 1 and 2 should be completed before you start another job.

ON THE JOB

Use good techniques.

Good machine operating techniques help build speed and accuracy.

OFFICE MACHINES COURSE



TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

HIGHLIGHTS

Touch-operated, ten-key printing calculators are being used increasingly to do a variety of business calculations. Addition, subtraction, multiplication, and division problems are solved quickly and easily. Every calculation is clearly printed on a tape. This printed solution can be verified visually in seconds. Tapes can be filed away for future reference and auditing. Complex problems can be solved quickly and accurately with only a few hours of training. These features have made the printing calculator a very popular desk model machine.

Printing calculators are made by **Marchant, Monroe, Remington Rand, Underwood-Olivetti, Victor,** and others. While these machines operate on the same functional principles, each has its own operational procedures and special features. These will be explained as they are used to solve typical business problems.

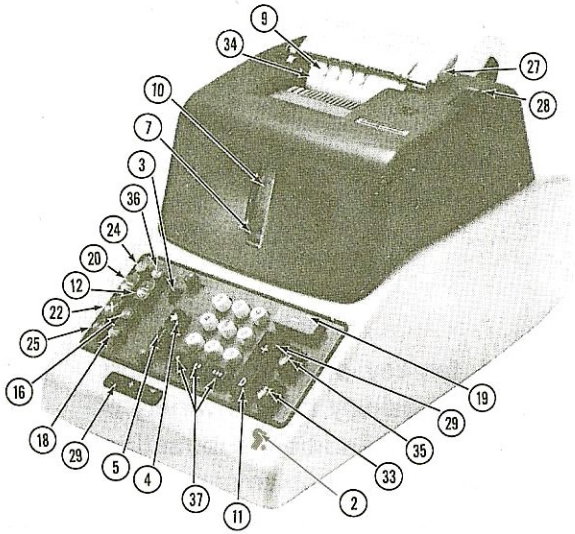
The compact arrangement of the keys makes it possible to operate these machines by touch. This results in greater speed, a higher degree of accuracy, and less physical fatigue. The aim of this course is to develop speed and accuracy in the touch method of entering numbers that are to be added, subtracted, multiplied, and divided.

CBE 29

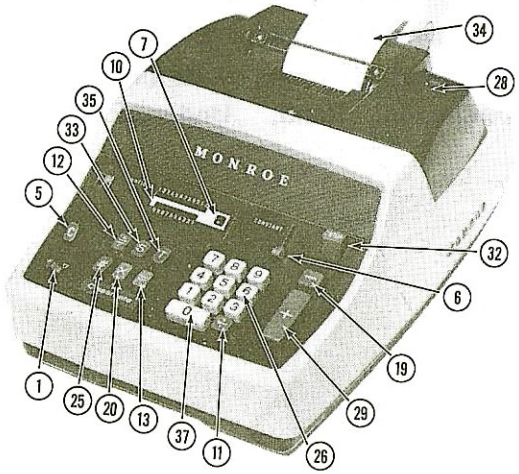
TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

PART NO. MACHINE PARTS

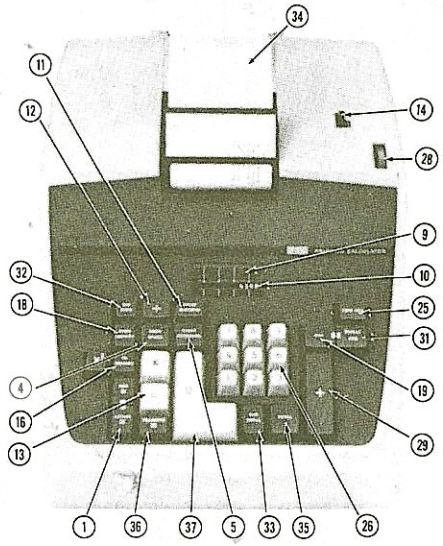
1 Accumulation Lever
2 Automatic Subtotal Lever
3 Automatic Total Key (Lever)
4 Backspace Key
5 Clear Key
6 Constant Key
7 Credit Balance Indicator
8 Decimal Control Scale
9 Decimal Indicator
10 Digit Indicator
11 Dividend Key
12 Division Key
13 Equals
14 Line Space Selector
15 Master Control Lever
16 Memory Input Key
17 Memory Key
18 Memory Output Key
19 Minus Bar
20 Multiplication Key
21 Multiplication Keyboard
22 Multiplier Key
23 Multi-purpose Motor Bars
24 Negative Multiplication Key
25 Non-Add Key
26 Numeral Keys
27 Paper Release Lever
28 Platen Knob
29 Plus Bar
30 Recall Key
31 Repeat Key (Lever)
32 Stop Key
33 Subtotal Key
34 Tape
35 Total or Grand Total Bar
36 Transfer
37 Zero Keys



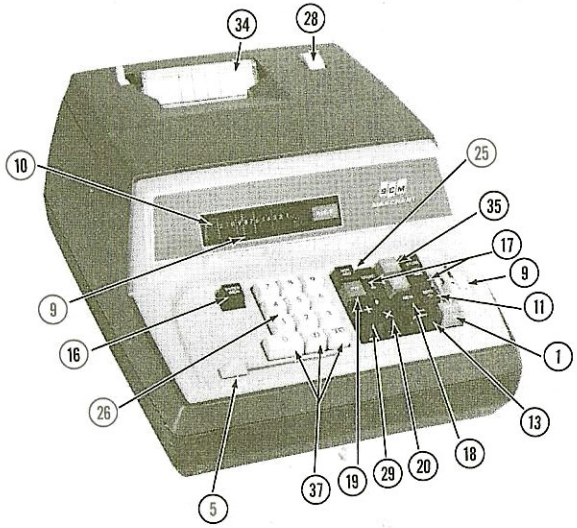
Underwood-Olivetti



Monroe



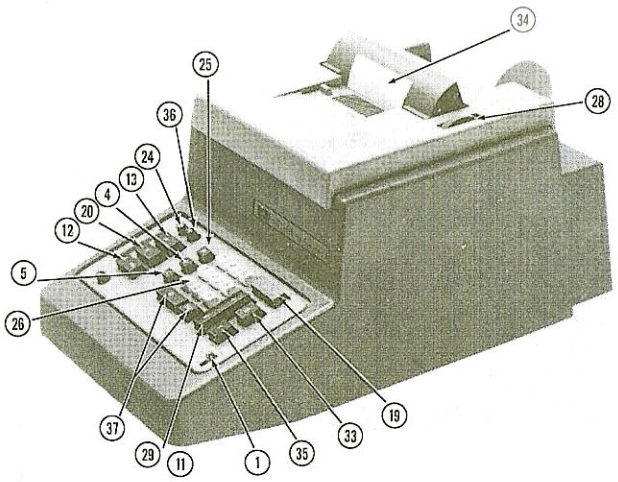
Friden



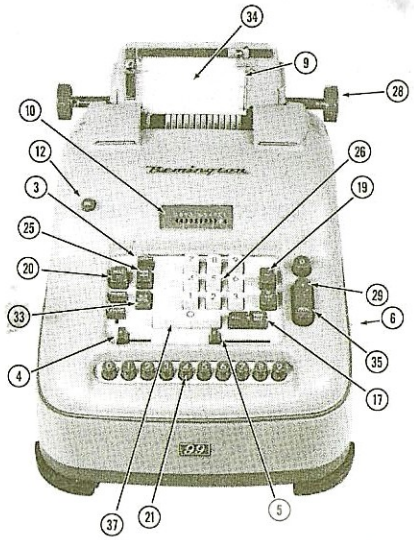
Marchant

(30)

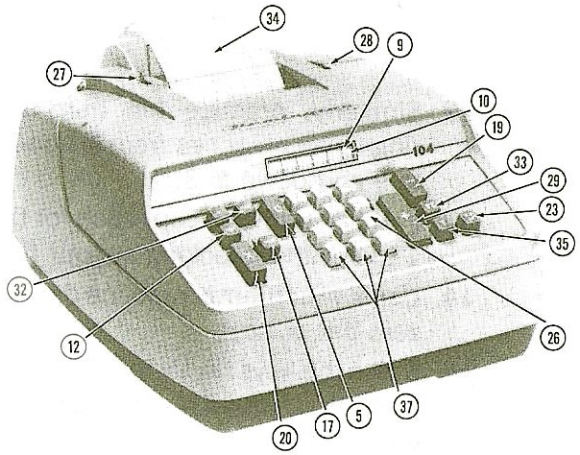
TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR



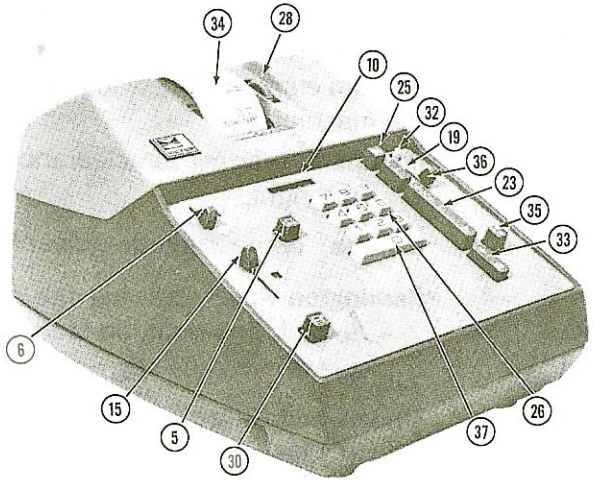
Underwood-Olivetti



Remington 99



Remington 104



Victor

PART NO.	MACHINE PARTS
1	Accumulation Lever
2	Automatic Subtotal Lever
3	Automatic Total Key (Lever)
4	Backspace Key
5	Clear Key
6	Constant Key
7	Credit Balance Indicator
8	Decimal Control Scale
9	Decimal Indicator
10	Digit Indicator
11	Dividend Key
12	Division Key
13	Equals
14	Line Space Selector
15	Master Control Lever
16	Memory Input Key
17	Memory Key
18	Memory Output Key
19	Minus Bar
20	Multiplication Key
21	Multiplication Keyboard
22	Multiplier Key
23	Multi-purpose Motor Bars
24	Negative Multiplication Key
25	Non-Add Key
26	Numeral Keys
27	Paper Release Lever
28	Platen Knob
29	Plus Bar
30	Recall Key
31	Repeat Key (Lever)
32	Stop Key
33	Subtotal Key
34	Tape
35	Total or Grand Total Bar
36	Transfer
37	Zero Keys

(31)

GENERAL INSTRUCTIONS

1. Read each job thoroughly before beginning problems.
2. Clear your desk or table of books that do not pertain to the course.
3. Place the machine to the right of your desk or table, at a slight right angle, and this book at the left.
4. Position the machine and book to give you ease of operation and reading.
5. Sit erect, relax, and put feet flat on the floor.
6. Put the thumb on the zero bar and the first, second, and third fingers on the middle bank of keys — 4, 5, and 6. This is the home-key position from which you reach out to all the keys on the keyboard.
7. Move your fingers up to the top bank of keys — the keys for 7, 8, and 9.
8. Bring your fingers back to the middle bank. Notice that the home keys, 4, 5, and 6, are deeper than those of the upper bank.
9. Reach down to the lower bank of keys — the keys for 1, 2, and 3. Notice that these are not so deep as the home keys.
10. With your first finger (the index finger), practice reaching up to 7 and down to 1 from the home key, 4. Your fingers should be curved slightly, and you should guide your first finger to the center of the keys for 7, 4, and 1.
11. With your second finger (the middle finger), practice reaching up to 8 from the home key, 5, and down to 2.
12. Similarly, practice the third-finger (the ring finger) reaches from home key, 6, up to 9 and down to 3.
13. Practice until you can reach for the figures 1 to 9 without looking at your fingers.
14. Using your thumb, practice depressing the zero bar or keys.
15. Strike the keys firmly in the center and release them quickly. You can strike only **one** key at a time; therefore, be sure to release quickly so that the next key can be depressed.
16. If you happen to depress the wrong key and discover your error before depressing a functional key such as plus (+), subtract (—), enter dividend (DIVD ÷), enter multiplicand (×), or memory-storage (M) keys, you can eliminate the whole number from the machine by:

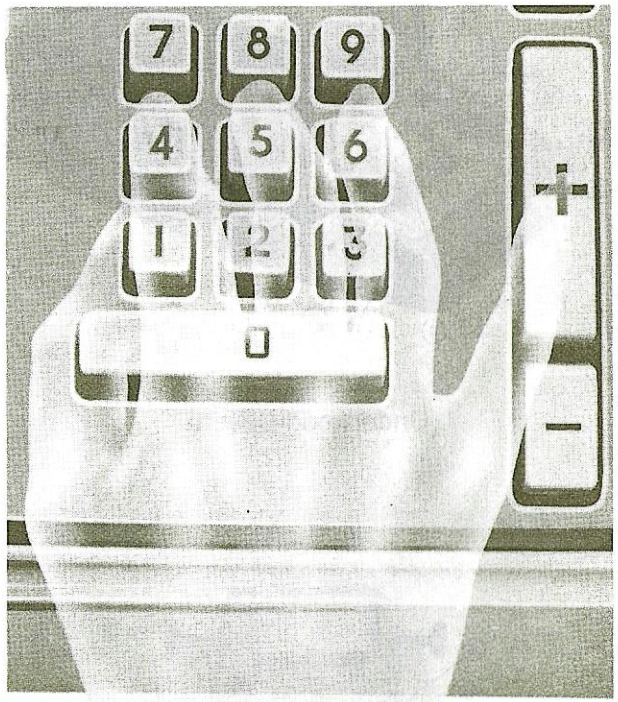
    Marchant, drawing the clearance lever to the right;

    Monroe, depressing the clear (C) key;

    Remington Rand, drawing the clearance lever to the right; on Model 104, depress clear (C) key;

    Underwood-Olivetti, depressing the clear (C) key;

    Victor, moving the correction lever downward. The correction keys or levers are located either at the left or below the keyboard.



Correct Hand Position

TOUCH ADDITION

JOB NO. 11 TOUCH ADDITION

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To develop speed and accuracy in touch addition.

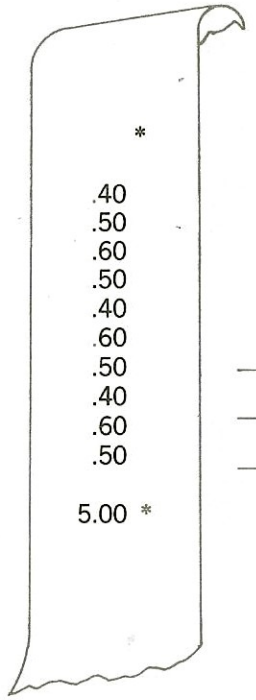
PROCEDURE

You should be familiar with the information in the introductory pages of this job before you begin to do the problems.

1. CLEAR MACHINE.

a. Operate the correction key or clearance lever to eliminate any number that may have been left on the keyboard. These keys or levers are located at the left or below the keyboard. To do this on:
   (1) **Marchant,** draw the clearance lever to the right. Depress the (STORE I) key, and keep it depressed for all addition and subtraction problems.
   (2) **Remington Rand,** draw the clearance lever to the right. If necessary, release extend (Ext.) key. Move total control lever to the right, and move constant lever toward rear of machine. On Model 104, depress (C) key.
   (3) **Monroe** and **Underwood-Olivetti,** depress the clear key.
   (4) **Victor,** draw lever downward.

b. Take a total.
   (1) On **Marchant, Monroe,** and **Underwood-Olivetti,** depress the total (T), (*) key.
   (2) On **Remington Rand,** depress the plus (+) bar twice. On Model 104, depress the total (T) key.
   (3) On **Victor,** depress the motor bar.
   (4) The machines print total symbols as follows: **Marchant,** (TI); **Victor,** (.00T); **Monroe, Remington Rand,** and **Underwood-Olivetti,** (*), (T).



Tape for Problem 1 from a Monroe Printing Calculator

1	2	3	4
.40	4.04	45.60	44.40
.50	5.05	40.56	55.50
.60	6.06	45.06	66.60
.50	4.05	65.40	46.50
.40	4.06	60.54	56.40
.60	5.04	65.04	65.40
.50	6.05	56.40	46.50
.40	5.04	50.64	65.40
.60	5.06	56.04	56.40
.50	5.04	45.60	46.50

5	6	7	8
46.50	50.65	56.05	45.60
56.40	40.56	46.05	65.40
65.40	50.45	46.04	56.40
46.50	40.64	65.06	45.60
65.40	60.54	54.06	65.40
56.40	40.54	64.06	56.40
46.50	60.65	45.04	45.60
65.40	50.56	45.06	65.40
54.60	40.54	65.06	56.40
65.40	40.45	54.05	45.60

ANSWERS

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____
8 _____

33

JOB NO. 11 / CONTINUED

9	10	11	12	13
7.40	7.54	50.67	8.05	8.54
4.70	5.47	60.74	5.08	5.84
7.45	5.76	74.05	6.08	6.84
4.75	6.74	47.05	8.06	4.86
4.57	7.56	45.70	8.56	6.85
7.45	5.67	57.40	5.48	6.48
7.50	6.74	75.40	6.48	4.58
7.05	6.57	50.47	5.86	5.48
7.04	6.75	50.67	6.85	6.48
4.07	5.67	60.75	4.08	5.68
5.07	5.74	65.07	5.08	4.68
5.67	7.54	75.06	6.08	6.58

14	15	16	17	18
40.85	6.90	7.59	80.97	9.68
50.86	9.60	6.59	60.49	4.89
78.04	5.69	5.69	76.09	9.74
84.07	9.56	4.69	84.09	8.94
75.60	4.09	7.49	45.90	7.49
67.40	9.04	9.54	89.60	5.69
50.67	5.90	4.59	60.59	9.45
40.58	9.50	6.79	50.49	8.94
80.56	8.60	8.69	86.09	4.79
50.84	6.80	4.79	68.09	4.79
46.70	9.06	6.49	46.90	7.89
85.60	6.90	8.59	85.90	9.68

ANSWERS

9 _____
10 _____
11 _____
12 _____
13 _____
14 _____
15 _____
16 _____
17 _____
18 _____

34

TOUCH ADDITION

c. Set decimal pointer.
   (1) On the **Remington Rand** 104, turn the decimal locator knob, located at upper right side of the machine, away from you, for two clicks. The red decimal pointer will be between the second and third vertical markers of the column indicator scale.

2. USE THE TOUCH METHOD you practiced earlier to complete the problems in this job. Keep your eyes on the figures of the problem, **not on the keyboard.** You must find the keys **only by touch.**

3. ENTER ITEMS in Problems 1-8 following these steps:

a. Use the first finger of the right hand to depress 4. Use a firm, quick stroke, and release the key quickly.
b. Use the second finger to depress 5, and be sure to release the key quickly.
c. Use the third finger to depress 6, and release it quickly.
d. Use the thumb to depress the zero bar.
e. Use the fourth finger to operate the plus (+) or motor bar.

4. COMPLETE ADDITION. Work your way down the problem depressing all keys by the touch method.

5. DEPRESS KEYS FOR EACH FIGURE in the same order, left to right, that you follow to write numbers.

6. TAKE A TOTAL. Follow the instructions under 1 (b).

7. **WRITE THE TOTAL** directly below the problem in the space provided, and immediately do the problem a second time. If the second answer is the same as the first, write it in the proper space in the Answers column. If the second answer is different from the first, write it directly below the first answer and do the problem again. Write the answer that proves to be correct in the Answers column at the right.

8. **KEYS 7, 8, AND 9** are introduced in problems 9-18. The following touch method should be used to depress these keys.
   a. The first finger depresses the 4 and 7 keys.
   b. The second finger depresses the 5 and 8 keys.
   c. The third finger depresses the 6 and 9 keys.

9. **KEYS 1, 2, AND 3** are presented in problems 19-28. The touch method for the proper depression of these keys is:
   a. The first finger depresses the 4, 7, and 1 keys.
   b. The second finger depresses the 5, 8, and 2 keys.
   c. The third finger depresses 6, 9, and 3 keys.

10. **FOUR-DIGIT NUMBERS** are presented in problems 29-31. The same touch method is used regardless of the size of the number.

11. **TEAR OFF TAPE** when it becomes as long as this page, and number the problems.

JOB NO. 11 / CONTINUED Name_____ Period_____

19	20	21	22	23
4.10	7.41	4.18	5.20	6.52
1.40	1.47	8.15	2.50	6.25
4.01	8.41	4.71	2.05	5.26
1.04	8.14	7.51	5.02	5.62
5.41	9.41	9.15	8.52	7.52
1.45	1.49	1.98	2.58	7.25
6.41	1.48	9.16	2.85	5.27
5.14	1.47	1.96	5.82	5.72
6.41	9.14	1.94	5.28	9.52
6.14	9.41	8.51	5.02	9.25
4.14	1.49	1.64	5.02	2.59
1.41	7.41	5.61	8.02	5.29

24	25	26	27	28
52.60	6.30	4.39	63.50	3.59
24.50	3.60	5.39	96.30	1.32
52.80	6.03	6.39	35.60	4.93
95.20	3.06	9.34	86.30	6.39
25.40	6.90	9.35	26.30	5.93
52.10	9.60	9.36	36.50	9.23
16.20	6.09	3.91	64.30	3.25
52.90	9.06	3.92	76.30	6.31
51.20	6.93	3.94	95.30	3.46
58.61	3.69	3.95	53.90	5.34
42.80	3.09	3.96	83.60	3.12
42.08	3.90	3.97	43.50	5.31

ANSWERS

19 _____
20 _____
21 _____
22 _____
23 _____
24 _____
25 _____
26 _____
27 _____
28 _____

35

JOB NO. 11 / CONTINUED

29	30	31
81.10	15.31	88.27
14.10	38.64	45.48
55.30	57.31	27.89
33.20	23.80	53.22
44.80	64.25	31.99
76.70	57.36	18.07
44.90	20.40	26.49
92.90	18.55	87.46
57.70	44.36	38.17
88.40	36.95	22.18
12.50	69.36	51.46
52.30	74.64	45.50

ANSWERS

29 _____

30 _____

31 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3	4	5	6
8.70	8.52	7.55	2.68	31.04	28.42
6.05	7.13	8.48	3.19	37.20	39.26
1.91	2.88	9.33	2.87	20.95	37.52
4.28	3.95	5.28	4.73	40.62	46.37
7.53	2.54	7.82	4.28	55.01	15.66
4.07	4.77	5.67	6.49	68.04	41.13
5.08	6.58	9.85	3.72	42.07	34.81
6.93	3.65	4.15	4.39	39.08	42.56
5.28	6.96	3.62	5.43	51.02	54.72
4.17	7.51	7.56	5.62	40.41	69.83
5.82	2.98	8.79	4.71	60.89	58.27
5.85	4.45	4.56	8.72	63.50	63.49
65.67	61.92	82.66	56.83	549.83	532.04

35 36

12. COMPLETE THE TIMED DRILL.

a. Do each problem only once.
b. Place a check mark (✓) next to the answer if your answer is correct, an (X) if incorrect.
c. In the spaces provided on page 36, record the starting and finishing time. Drop fractions of a minute smaller than ½. Fractions larger than ½ minute but less than one full minute are recorded as ½ minute. Subtract to get the time required for completion of the drill.
d. Count the (X's), and use Grading Scale No. 1 on page 187 to determine your grade.
e. If you have time, do the Timed Drill again.
f. Always record your best grade on the Achievement Chart on page 188.

13. TEAR OFF PAGES along the perforated lines. Arrange the tapes in numerical order, and attach them to the left side of this job sheet.

14. GIVE JOB TO INSTRUCTOR when completed.

12 SUBTRACTION AND CORRECTION OF ERRORS

JOB NO. 12
SUBTRACTION AND CORRECTION OF ERRORS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIMS:

1. To present the steps followed in touch subtraction.
2. To teach the procedures used in correcting listed errors.

PROCEDURE

1. **CLEAR MACHINE.** On **Marchant,** see that (STORE I) key remains depressed.
2. **SUBTRACT** following the instructions given below for solving Problem 1.
   a. By touch, enter the minuend, 69.25, (the top number), and depress the plus (+) or motor bar.
   b. Enter, by the touch method, the subtrahend, 8.50, and depress the subtraction (—) key or bar.
   c. Take a total, and record the difference, 60.75, in the space provided.
   d. Immediately, do the problem again to verify the answer as in addition.
3. **CORRECT ERRORS** in entering amounts by using one of the following procedures:
   a. If the error is discovered before the plus (+) or subtraction (—) keys have been depressed, use the clear key or clearance lever.
   b. If the error is discovered after the amount has been printed on the tape, subtract the incorrect amount for errors in addition. Add the incorrect amount for errors in subtraction.

1	2	3	4	5
69.25 —8.50	98.14 —71.09	81.16 —18.35	39.14 —9.15	429.00 —145.70
6	7	8	9	10
374.76 —18.15	667.62 —137.47	974.76 —267.62	233.40 —23.75	812.46 —241.80
11	12	13	14	15
329.45 285.76— 225.40— 84.24 17.50— 34.85— 522.90— 116.52 1.75 300.01 250.00— 150.00	602.90 738.71— 98.16 450.91— 961.41 85.65 79.56— 264.50 51.69 182.45 67.37 312.50	43.15 79.21 91.18 69.16 92.85— 3.74— 93.05— 32.31 75.52 37.40 92.14 25.17	153.74 5.98 187.05— 52.80 830.96 91.03— 201.38 67.60 86.44 60.57— 139.50 25.75	265.41 136.24— 818.21 356.13— 378.35 41.60— 398.01 497.64 125.62 300.47 148.20 405.55

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

37

JOB NO. 12 / CONTINUED

16	17	18
263.55	697.05	85.46
−788.12	−986.01	−91.75

19	20	21
649.52	448.21	82.49
−121.05	−219.02	−9.61

ANSWERS

16		19	
17		20	
18		21	

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3	4	5	6
49.64	58.35	94.28	13.20	41.46	89.37−
86.21	48.21−	12.82	48.73−	18.50	19.05
48.05	88.57	90.49−	19.83	34.87	91.63
82.45	54.58	39.12	63.41	21.50−	20.86−
38.71−	59.65	50.26	13.47	62.43	34.80
68.21	19.25−	66.70	89.48	10.68	66.42
85.73	37.26	72.17	46.28−	23.27	53.44
18.67	98.33	26.60	39.35	33.47	58.64
21.79	31.90	96.53	64.19	62.80	62.52
33.92−	68.05−	45.97	96.32	25.73−	44.38−
26.67	39.41	68.42	77.81−	27.87	92.01
74.00	31.47	49.89	46.36	21.71	91.57
41.50	45.75	82.03	84.50	44.97	86.52
35.85	89.03	40.77	87.44	78.90	13.55
566.14	498.79	655.07	444.73	413.70	515.54

38

12 SUBTRACTION AND CORRECTION OF ERRORS

c. If the error is discovered after the total has been obtained, add or subtract with pen or pencil.

4. **DO PROBLEMS 11-15** by following the steps listed below for solving Problem 11.
   a. Use the touch method to enter all items.
   b. Depress the subtraction (−) bar for all items followed by a minus (−) sign.
   c. Depress the plus (+) bar for those items that are not followed by a minus (−) sign.
   d. Take a total as usual.
   e. If the items subtracted exceed those added, the calculator will indicate a credit balance by printing the answer in red, and/or printing "Cr.," "C," "TI," or a minus sign after the total. On **Remington** Model 104, the machine prints the complement of the credit balance preceded by a series of 9's (99999645.56). To get the true credit balance, depress the (−) key, and then the (T) key.
   f. The answer to Problem 11 is 354.44 Cr. The answer should be recorded with the **Cr.** abbreviation.
   g. When the total key is depressed to clear the calculator for the next problem, a red credit balance symbol will appear instead of the usual total symbol.
5. **DO CREDIT BALANCE PROBLEMS 16-18.** Write "Cr." after the answers.
6. **COMPLETE THE TIMED DRILL.** Follow instructions listed on page 36. Use Grading Scale No. 2.
7. **NUMBER THE PROBLEMS** on the tapes. Arrange the tapes in numerical order, and attach them to the left side of the job sheet.
8. **GIVE JOB TO INSTRUCTOR** when completed.

13 MULTIPLICATION AND REPEAT ADDITION

JOB NO. 13
MULTIPLICATION AND REPEAT ADDITION

Name _____ No. of Errors ____
Period _____ Date _____ Rating _____

AIM:

To present the procedure followed for repeat-addition and multiplication.

PROCEDURE

1. **CLEAR MACHINE.** On **Marchant,** be sure that (STORE I) key is depressed.
2. **MULTIPLY** in Problems 1-8 by following the steps listed below for solving Problem 1.

Marchant, Monroe, and Underwood-Olivetti

a. By touch, enter the multiplicand, 143, and depress the multiplication (×) key. It is located at the left of the keyboard on the **Monroe** and **Underwood-Olivetti,** at the right on the **Marchant.**
b. On the **Underwood-Olivetti,** move automatic accumulator (upper left) and the repeat lever (lower left) to the left.
c. On the **Marchant,** set decimal control lever (upper right) at zero for Problems 1 to 4 and at two for Problems 5 to 8.
d. By touch, enter the multiplier, 23, and depress the equals (=) key, located above or to the right of the (×) key.
e. The product, 3,289, will print automatically. Record it in the spaces provided.

Remington Rand

a. Enter the multiplicand, 143, and depress the positioning key (←), located under the 3 key. This key is depressed once for every figure in the multiplier **less one.**

INSTRUCTIONS FOR REPEAT ADDITION

All Makes: By touch, enter 125.75, and on:

Marchant

a. Depress the plus (+) bar four times.*

Monroe

a. Hold down the plus (+) and repeat (") keys for four machine cycles.
b. Depress the (C) key.*

Remington Rand

a. Latch down the (Ext.) key, located at the right of the keyboard.

Remington Rand (Cont'd.)

b. Depress the plus (+) bar four times.
c. Move (C) lever to right. This is not necessary on Model 104.*

Underwood-Olivetti

a. Move the repeat lever, located below the keyboard, to the left.
b. Depress the plus (+) bar four times.
c. Depress the clear key.*

Victor

a. Move the repeat lever (located at upper center) down, and hold it for four machine cycles.*

*Follow the same procedure to repeat-add the remaining items.

Note: Disregard the decimal point if one is printed on the tape for Problems 1-4 and 11-20. For Problems 5-10, the two decimal place position must be recorded.

1. 143 × 23 _____
2. 675 × 31 _____
3. 463 × 56 _____
4. 378 × 17 _____
5. 418 × 1.25 _____
6. 721 × 8.25 _____
7. 579 × 2.44 _____
8. 196 × 3.47 _____

9. 125.75
125.75
125.75
125.75
255.45
255.45
255.45
255.45
255.45
689.62
689.62
689.62

10. 838.75
838.75
838.75
378.17
378.17
378.17
378.17
378.17
801.28
801.28
801.28
801.28

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

JOB NO. 13 / CONTINUED

11 782 × 8227 _____
12 384 × 5352 _____
13 635 × 7215 _____
14 835 × 1421 _____
15 567 × 4846 _____
16 861 × 1623 _____
17 147 × 7452 _____
18 162 × 5664 _____
19 366 × 5953 _____
20 392 × 1379 _____

ANSWERS

11 _____ 16 _____
12 _____ 17 _____
13 _____ 18 _____
14 _____ 19 _____
15 _____ 20 _____

TIMED DRILL

Finished at _____ o'clock
Started at _____ o-clock
_____ minutes
Subtract _____ required

TIMED DRILL

1	2	3	4	5	6
4.63	53.92	230.86	566.40	745.19	162.93
8.16	53.92	540.87	−147.28	−52.40	−921.50
7.12	53.92	861.23			
2.96	53.92	920.54	419.12	692.79	758.57 Cr.
1.96	38.14	822.75			
8.22	38.14	384.11			
8.50	38.14	466.02			
9.80	38.14	582.33			
6.51	38.14	718.20			
6.28	68.96	646.16			
6.79	68.96	595.37			
5.59	68.96	536.69			
76.52	613.26	7,305.13			

40

7 628 × 246 154,488
8 493 × 671 330,803
9 688 × 136 93,568
10 823 × 622 511,906
11 341 × 724 246,884
12 141 × 322 45,402

13 MULTIPLICATION AND REPEAT ADDITION

b. Multiply from left to right by depressing the automatic multiplication keys (located below the keyboard) for 2 and then 3.
c. On machines with a multiplication lever, at the left of the keyboard, **push it away** from you and **hold it** while the machine cycles twice, and quickly release the lever. Then **push the lever forward** again and **hold it** while the machine cycles three times, and quickly release the lever. To multiply by a zero, move the lever **towards** you once.
d. On Model 104, enter the multiplicand, 143, and depress the multiplication (×) key. Enter the multiplier, 23, and again depress the (×) key.
e. The product, 3,289, will print automatically. Record it in the spaces provided.

Victor

a. Push the control lever, located at the left of keyboard, **up.** An "×" will appear in the control window.
b. Enter the multiplicand, 143, and depress the motor bar.
c. Enter the multiplier, 23, and depress the motor bar.
d. The product, 3,289, will print automatically. Record it in the spaces provided.

3. COMPLETE THE TIMED DRILL as usual, and use Grading Scale No. 1 on page 187 to determine your grade.

4. ATTACH TAPES to the job sheet, and give the completed job to your instructor.

14 DIVISION

TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

JOB NO. 14
DIVISION

Name _____ Period _____ Date _____

No. of Errors _____
Rating _____

AIM:

To present the procedure followed for dividing on printing calculators.

HIGHLIGHTS

Division on printing calculators is direct, simple, and semi-automatic. The dividend is entered by depressing the plus (+) or divide (÷) set-up keys. The divisor is entered by depressing an equals (=) or a divide (÷) key. The tape shows the dividend, the divisor, the quotient, and the remainder. These are printed horizontally on most calculators. On the **Remington Rand,** the quotient is printed vertically at the left of the tape. The dividend, the divisor, and the remainder are printed horizontally at the right.

PROCEDURE

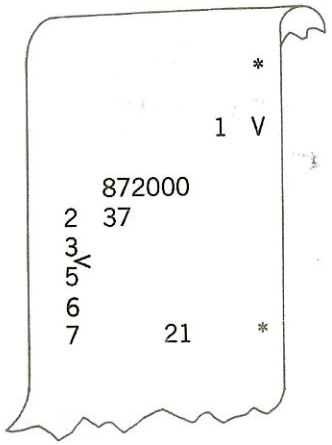
1. **CLEAR MACHINE,** and on the **Marchant** and **Remington Rand,** set the decimal control or indicator levers at "3." On Model 104, turn decimal locator knob to move red pointer between the third and fourth vertical markers. On **Victor,** move control to (÷). On **Monroe,** set quotient cut-off at "5."

2. **ENTER THE DIVIDEND,** 872, and 3 zeros (872000) on the keyboard. (The zeros are added to carry the division out to three decimal places. The answer can then be rounded off to the nearest hundreds or second decimal place.) After entering the figure 872000, on the:

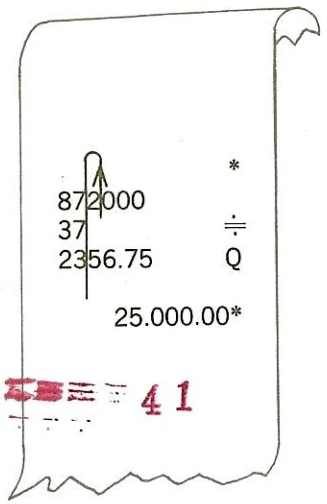
   Marchant, depress (DIVD÷) key.
   Monroe, depress (÷) key; if necessary, then the (+) key.
   Remington Rand, depress plus (+) bar. On Model 104, merely depress the division (÷) key.
   Underwood-Olivetti, depress plus (+) bar.
   Victor, depress motor bar.

1. 872 ÷ 37 _____
2. 4,167 ÷ 137 _____
3. 466 ÷ 96 _____
4. 3,471 ÷ 361 _____
5. 885 ÷ 53 _____
6. 5,387 ÷ 196 _____
7. 932 ÷ 48 _____
8. 9,265 ÷ 542 _____
9. 742 ÷ 56 _____
10. 5,367 ÷ 797 _____
11. 645 ÷ 84 _____
12. 9,265 ÷ 174 _____
13. 954 ÷ 79 _____
14. 9,364 ÷ 249 _____
15. 814 ÷ 55 _____
16. 5,396 ÷ 612 _____
17. 415 ÷ 19 _____
18. 2,590 ÷ 572 _____
19. 596 ÷ 89 _____
20. 5,167 ÷ 94 _____

Problem 1 as it appears on the tape of a **Remington Rand** calculator



Problem 1 as it appears on the tape of a **Monroe** calculator



ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

JOB NO. 14 / CONTINUED

21	22	23
22.16	214.40	538.83
15.92	352.28	423.61
28.13	113.50	319.32
69.60	942.36	273.17
79.01	844.81	912.50
52.38	426.13	712.50
25.50	567.28	412.68
64.29	165.14	366.82
98.27	324.58	145.55
24.38	268.71	198.41
79.01	119.81	375.71
23.80	265.13	473.11

ANSWERS

21 _____

22 _____

23 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3
52.51	950.85	163.11
34.39	379.24	421.62
56.32	454.82	854.02
70.57	702.42	271.59
63.63	105.21	645.15
32.35	489.79	140.10
90.14	410.37	539.79
42.36	891.23	966.45
18.92	717.68	234.57
94.05	855.17	811.21
26.28	790.27	647.48
37.65	411.66	183.19
619.17	7,158.71	5,878.28

4 458 × 152 69,616

5 918 × 261 239,598

6 477 × 632 301,464

7 847 ÷ 181 4.68

8 951 ÷ 89 10.69

9 789 ÷ 211 3.74

10 685 ÷ 57 12.02

11 589 ÷ 62 9.50

12 945 ÷ 156 6.06

42

04 DIVISION

3. ENTER THE DIVISOR, 37, on the keyboard, and on the:

a. **Marchant,** depress 3 zeros and (=) key.

b. **Monroe,** depress (÷) and/or (≒) keys. On some models, depress the (STOP) key when indicator reaches (7), one more than there are figures in the dividend.

c. **Remington Rand,** depress the positioning (←) key four times (6 figures in the dividend less 2 in the divisor, equals 4), then depress the divide (÷) key. On Model 104, merely depress the division (÷) key.

d. **Underwood-Olivetti,** depress (≒) key.

e. **Victor,** depress the motor bar.

4. QUOTIENT PRINTS. The machine will automatically print the quotient, 23567, and the remainder, 21. Point off three places to get 23.567. (Because three zeros were added to the dividend, 872, three decimal places must be pointed off in the quotient. The quotient will then be 23.567.)

On the **Monroe** tape, manually place a decimal between the dividend and the three zeros, (872.000). Move it to the left as many places as there are whole numbers in the divisor **less 1,** (87.2000). From this point, draw a straight line downward to locate the decimal in the quotient as shown on the tape at right of page 41.

5. ROUND OFF THE ANSWER to two decimals, and record it as 23.57.

6. COMPLETE PROBLEMS that remain on pages 41 and 42.

7. COMPLETE TIMED DRILL. Use Grading Scale No. 3 on page 187 to determine your grade.

8. NUMBER THE PROBLEMS on the tapes, attach tapes to the job, and give the completed job to your instructor.

15 DISCOUNTS

TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

JOB NO. 15
DISCOUNTS

Name _____ Period _____ Date _____

No. of Errors _____ Rating _____

AIM:

To present the procedure for computing a single discount and the net amount of an invoice.

PROCEDURE

1. FIND THE DISCOUNT AND NET AMOUNT by following the steps listed below for solving Problem 6.

Marchant

a. Set the decimal indicator at "2."
b. Enter the gross amount, 635.40. Depress the plus (+) key, and then the (×) key.
c. Enter the discount, .10, and depress the equals (=) key.
d. Record the discount, 63.54.
e. Depress the subtract (—) key, and then the (TOTAL) bar. Record the answer, 571.86, as the net amount.

Note: On Monroe, Remington Rand, Underwood-Olivetti, and Victor, point off four decimals to get the discount and the net amount.

Monroe

a. Enter the gross amount, 635.40, and depress the multiplication (×) key.
b. On models with constant levers, move it to **UP.**
c. Enter the discount, .10, and depress the equals (=) key.
d. Record the discount as 63.54.
e. If constant lever is used, depress (×) key. Enter the complement of the discount .90, (100 less 10). If constant lever is used, move it **down.** Depress (=) key.
f. Record the net amount, 571.86.

Remington Rand, Model 99

a. Set the total control lever to the left.
b. Enter 635.40, and multiply by .10.
c. Depress (SUB-TOTAL), then the (+) bar twice.
d. Point off four decimals; record discount, 63.54.
e. Enter gross amount and two zeros, 635.4000, and depress the (—) and total (twice) keys.
f. Ignore cr. sign; record net amount, 571.86.

Instructions for Computing the Amount of Discount

1. FIND THE AMOUNT of a single discount following the procedure listed below for solving Problem 1.

a. Multiply the amount, 475.25, by the discount, .15, and point off 4 places, (2 decimals in the amount plus 2 decimals in the discount).

2. ROUND OFF THE ANSWER, 71.2875, to two decimals, and record it as 71.29.

Find **only** the **Discount:**

		ANSWERS
1	475.25 less 15% discount _____	1 _____
2	725.84 less 20% discount _____	2 _____
3	845.11 less 10% discount _____	3 _____
4	596.89 less 12% discount _____	4 _____
5	375.95 less 5% discount _____	5 _____

Find the **Discount and** the **Net Amount:**

	Gross Amount		Rate	Discount	Net Amount		Net Amount Only
6	635.40	less	10%	_____	_____	6	_____
7	875.10	less	15%	_____	_____	7	_____
8	789.54	less	5%	_____	_____	8	_____
9	495.23	less	3%	_____	_____	9	_____
10	934.56	less	20%	_____	_____	10	_____

43

JOB NO. 15 / CONTINUED

11	12	13
158.10	192.24	927.25
170.53	119.50	−98.50
181.35	112.97	
193.14	147.59	
205.67	253.13	
612.18	510.78	
922.14	369.14	
518.27	312.71	14
189.17	182.45	
187.64	418.52	
910.44	532.99	418.75
165.48	254.96	−113.87

ANSWERS

11 _____

12 _____

13 _____

14 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2
760.71	490.40
531.04	384.47
166.17	397.57
904.46	618.63
568.27	526.52
100.68	698.53
616.29	175.18
705.60	542.92
881.49	305.08
165.30	333.16
132.26	183.05
329.71	165.13
126.23	961.15
5,988.21	5,781.79

44

		Discount	Net Amount
3	495.15 less 12%	59.42	435.73
4	741.80 less 15%	111.27	630.53
5	950.85 less 10%	95.09	855.77
6	305.05 less 5%	15.25	289.80
7	970.92 less 20%	194.18	776.74
8	430.40 less 2%	8.61	421.79
9	636.60 less 11%	70.03	566.57
10	284.10 less 14%	39.77	244.33

15 DISCOUNTS

Remington Rand, Model 104

a. Enter 635.40; depress (×) and (STOR) keys.
b. Multiply by .10. Point off four decimals; record discount as 63.54.
c. Depress (+) key; enter discount, 63.54, and depress the (—) and (T) keys.
d. Release the storage key by moving the small lever on its left side toward you.
e. Record the net amount, 571.86.

Underwood-Olivetti

a. Enter the gross amount, 635.40, and depress the multiplication (×) key.
b. Enter the discount, .10, and depress the equals (=) key.
c. Record the discount, 63.54.
d. Enter the complement of the discount, .90 (100 less 10 = 90), and depress the equals (=) key.
e. Record the net amount, 571.86.

Victor

a. Move constant (C) lever down.
b. Move control lever up to (×).
c. Enter the gross amount, 635.40, and depress the motor bar.
d. Enter the discount, .10, and depress the motor bar.
e. Record the discount as 63.54.
f. Move the constant lever up.
g. Enter the complement of the discount, .90 (100 less 10 = 90), and depress the motor bar.
h. Record the net amount as 571.86.

2. **FIND THE DISCOUNT** only in Problems 1-5. Problems 6-10 require the full procedure for finding Discount and Net Amount.

3. **COMPLETE TIMED DRILL,** and use Grading Scale No. 3 on page 187 to determine your grade. If time permits, do Timed Drill again. Record your best grade on page 188.

4. **ATTACH TAPES** to the job sheet, and give the completed job to your instructor.

NOTE: Before proceeding to Job No. 16, ask your instructor about Test No. 3. He may want you to complete it before you start Job No. 16.

16 CONSTANTS IN MULTIPLICATION

JOB NO. 16
CONSTANTS IN MULTIPLICATION

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To present the steps followed for multiplying by a constant multiplier.

PROCEDURE

1. **MULTIPLY BY A CONSTANT** following the steps listed below and to the right for solving Problem 1.

Marchant

a. Set the decimal control lever at "2."
b. Enter the multiplicand, 325, and depress the (×) key.
c. Enter the constant, 2.25, and depress the (ENTER MEM), and then the equals (=) key.
d. Record the answer, 731.25.
e. Enter the next multiplicand, 76, and depress the (×) key, the recall memory (MEM) key, and then the equals (=) key.
f. Record the answer, 171.00.
g. Repeat Steps e and f for the remaining problems in the series.

Monroe

a. Enter the multiplier, 2.25, and depress the (×) key.
b. On models with constant lever, move it to **UP.**
c. Enter the multiplicand, 325, and depress the equals (=) key.
d. Record the answer, 731.25. If constant lever is used, depress (×) key.
e. Repeat Steps c and d for the remaining problems in the series. If constant lever is used move it **down** before the last multiplication.

Underwood-Olivetti

a. Move the automatic total lever to left.
b. Move the automatic subtotal lever up.
c. Enter the constant, 2.25, and depress the (×) key.

Instructions for the Remington Rand DX99 Calculator

a. Add the number of digits in the constant, 2.25. There are three. This number is then added to the number of digits in the largest multiplier, which again is three. (3 + 3 = 6) The total, 6, is subtracted from the capacity of the machine, 11. The remainder, 5, is the number of zeros to prefix before entering the constant.
b. Enter the number of zeros determined above, 5, and the constant, 2.25.
c. Simultaneously depress the positioning (←) and the (MEM) keys.
d. Move the constant lock lever toward you.
e. Print the constant by depressing the zero multiplier key.
f. Multiply by the first multiplier, 325, and record the answer, 731.25.
g. Reenter the constant by depressing the (MEM) key.
h. Print the constant by depressing the zero multiplier key.
i. Because 76 has fewer digits than the largest number, 325, prefix 76 with a zero to equal the maximum of 3 digits.
j. Multiply by 076, and record the answer, 171.00.
k. Repeat Steps g through i for the remaining problems in the series.
l. Clear out the constant by pushing the constant lever away from you.

1. 325 × 2.25 _____
2. 76 × 2.25 _____
3. 185 × 2.25 _____
4. 95 × 2.25 _____
5. 673 × 4.50 _____
6. 58 × 4.50 _____
7. 328 × 4.50 _____
8. 729 × 4.50 _____
9. 672 × 7.50 _____
10. 493 × 7.50 _____
11. 31 × 7.50 _____
12. 457 × 7.50 _____
13. 541 × 1.75 _____
14. 85 × 1.75 _____
15. 182 × 1.75 _____
16. 93 × 1.75 _____

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

45

JOB NO. 16 / CONTINUED

17 4581 Units @ 3.87 each _____

18 732 Units @ 3.87 each _____

19 85 Units @ 3.87 each _____

20 7112 Units @ 3.87 each _____

21 1456 Items @ 4.25 each _____

22 365 Items @ 4.25 each _____

23 82 Items @ 4.25 each _____

24 7364 Items @ 4.25 each _____

ANSWERS

17 _____ 21 _____

18 _____ 22 _____

19 _____ 23 _____

20 _____ 24 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3	4	5
501.42	763.45	263.55	461.50	251.05
166.21	362.19	671.50	−68.90	−89.01
604.12	812.12	542.16		
362.73	672.50	382.64	392.60	162.04
455.36	385.42	732.91		
604.23	129.32	364.54		
388.12	432.38	812.92		
732.76	381.66	455.31		
543.67	732.10	613.61		
166.12	256.04	236.07		
919.67	162.14	761.38		
~~732.12~~ 46	257.03	640.48		
376.52	674.56	325.31		
763.25	317.32	263.15		
7,316.30	6,338.23	7,065.53		

6 542 × 12.45 6,747.90

7 355 × 12.45 4,419.75

8 72 × 12.45 896.40

9 192 × 12.45 2,390.40

10 83 × 12.45 1,033.35

16 CONSTANTS IN MULTIPLICATION

d. Enter the multiplicand, 325, and depress the equals (=) key.
e. Record the answer, 731.25.
f. Repeat Steps d and e for the remaining problems in the series.

Remington Rand Model 104

a. Enter the constant, 2.25, and depress the (×) key.
b. Depress the (STOR) key.
c. Enter the multiplicand, 325, and depress the (×) key.
d. Depress the (×) key to recall the constant.
e. Enter the next multiplicand, 76, and depress the (×) key.
f. Repeat Steps d and e for each remaining multiplicand.
g. Release the (STOR) key by moving the release lever toward you.

Victor

a. Move control lever up to "X".
b. Move constant lever down to "C".
c. Enter the constant, 2.25, and depress the motor bar.
d. Enter the multiplicand, 325, and depress the motor bar.
e. Record the answer, 731.25.
f. Repeat Steps d and e for each problem in the series.
g. Move the constant lever up before solving the last problem of the series.

2. COMPLETE REMAINING PROBLEMS following the above procedure.

3. COMPLETE THE TIMED DRILL as usual, and use Grading Scale No. 2 on page 187 to determine your grade.

a. If you have time, do the Timed Drill again. Record your best grade on the Achievement Chart on page 188.

4. NUMBER PROBLEMS on the tapes and attach the tapes to the left side of this job sheet.

5. GIVE JOB TO INSTRUCTOR when completed.

17 CHAIN DISCOUNTS

TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

JOB NO. 17
CHAIN DISCOUNTS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To present the procedure for computing the net amount of an invoice on which a chain discount is allowed.

PROCEDURE

1. **FIND THE NET AMOUNT** of an invoice following the steps listed below or to the right for solving Problem 1.

Marchant

a. Set the decimal control at "2."
b. Enter the gross amount, 650.10, and depress the (×) key.
c. Enter the complement of first discount, .90 (100 — 10), and depress (=) key and then the (×) key.
d. Enter the complement of the next discount, .95 (100 — 05), and depress (=) key and then the (×) key.
e. Enter the complement of the last discount, .85 (100 — 15), and depress (=) key.
f. Record the answer, 472.46.

Monroe

For models without a transfer lever, clear the machine, and follow instructions on the right for **Remington Rand.** For all others:

a. Move accumulator lever to the left.
b. Enter the gross amount, 650.10, and depress the (×) key.
c. Move the transfer lever to the left.
d. Enter the complement of the first discount, .90 (100 — 10); depress the (=) key.
e. Enter the complement of the next discount, .95 (100 — 05), and depress the (=) key.
f. Enter the complement of the last discount, .85 (100 — 15), and depress the (=) key.
g. Record the answer as 472.46.
h. Take a total to clear the machine.

Instructions for the Remington Rand Calculator

Model 104

1. **SUBTRACT** each discount from 100 to get .90, .95, and .85.
2. **ENTER** .90 and depress (×) key.
3. **ENTER** .95, and depress (×) key.
4. **DEPRESS** (×) key again.
5. **ENTER** .85 and depress (×) key.
6. **DEPRESS** (×) key again.
7. **ENTER GROSS AMOUNT,** 650.10, and again depress (×) key.
8. **RECORD ANSWER** as 472.46 in the spaces provided. (Point off eight decimal places and round off to two places.)

DX99 Series

1. **FIND NET DECIMAL EQUIVALENT** of the discounts
   a. Subtract each one from 100 to get .90, .95, and .85.
   b. Multiply .90 by .95 to get .8550.
   c. Multiply .855 by .85 to get the net decimal equivalent of .72675.
2. **MULTIPLY GROSS AMOUNT,** 650.10, by .72675 to get the net amount of 472.4601750. Record it as 472.46 in the spaces provided.

Find the Net Amount.

				ANSWERS
1	650.10 less 10- 5-15	_____	_____	1 _____
2	425.50 less 10-10-20	_____	_____	2 _____
3	175.30 less 25- 5-10	_____	_____	3 _____
4	286.70 less 10-10- 5	_____	_____	4 _____
5	948.40 less 5- 5-10	_____	_____	5 _____
6	625.20 less 10-10-30	_____	_____	6 _____
7	377.60 less 10-25- 5	_____	_____	7 _____
8	530.10 less 20-10- 5	_____	_____	8 _____
9	845.50 less 5-25-10	_____	_____	9 _____
10	195.10 less 10-15- 5	_____	_____	10 _____

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JOB NO. 17 / CONTINUED

In the following problems, the net decimal equivalent of the discount series is listed under each problem. To get the net amount, multiply the gross amount by the decimal in the parentheses. Point off as many places in the answer as there are decimals in the amount and decimal equivalent combined. Round off the answer to two decimals.

ANSWERS

11 743.56 less 10-10-5 (.7695) _____ — 11 _____

12 845.10 less 10-10-10 (.729) _____ — 12 _____

13 785.93 less 20-10-5 (.684) _____ — 13 _____

14 134.10 less 40-5-5 (.5415) _____ — 14 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

1	2	3	4	5
405.95	153.87	398.64	417.62	214.91
206.95	262.77	175.00	−90.50	−22.51
102.49	418.70	275.91		
325.23	143.79	425.50	327.12	192.40
173.95	767.49	377.27		
424.90	487.95	275.25		
304.04	173.65	266.18		
362.43	245.79	205.76		
202.41	520.25	139.50		
495.02	169.10	314.41		
399.75	247.25	210.57		
347.62	635.00	334.50		
105.67	415.21	417.62		
410.24	180.00	167.75		
4,266.65	4,820.82	3,983.86		

6 214.85 less 10-10-5 (.7695) 165.33

7 266.18 less 10-10-10 (.729) 194.05

8 405.76 less 20-10-5 (.684) 277.54

9 366.93 less 40-5-5 (.5415) 198.69

10 841.50 less 5-10-10 (.7695) 647.53

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17 CHAIN DISCOUNTS

Underwood-Olivetti

a. Enter the gross amount, 650.10, and depress the (×) key.
b. Enter the complement of the first discount, .90 (100 — 10), and depress the (TR) key.
c. Enter the complement of the next discount, .95 (100 — 5), and depress the (TR) key.
d. Enter the complement of the last discount, .85 (100 — 15), and depress the (=) key. Point off eight decimal places.
e. Record the answer as 472.46.

Victor

a. Move the control lever up to (×).
b. Move Select-O-Matic lever to subtotal.
c. Enter the complement of the first discount, .90 (100 — 10), and depress the motor bar.
d. Enter the complement of the next discount, .95 (100 — 5), and depress the motor bar.
e. Depress the (TT) key and the motor bar in that order.
f. Move Select-O-Matic lever to subtotal.
g. Enter the complement of the last discount, .85 (100 — 15), and depress the motor bar.
h. Depress the (TT) key and the motor bar in that order.
i. Enter the gross amount, 650.10, and depress the motor bar.
j. Point off 8 places, and record the answer as 472.46.

2. COMPLETE REMAINING PROBLEMS following the above procedure.

3. COMPLETE THE TIMED DRILL as usual. Use Grading Scale No. 3 on page 187 to determine your grade.

4. GIVE JOB TO INSTRUCTOR when completed.

18 PAYROLL COMPUTATIONS

TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

JOB NO. 18 PAYROLL COMPUTATIONS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIMS:

1. To develop the ability to compute hours worked per day, and to apply lateness penalty rules.
2. To develop the ability to compute regular, overtime, and net pay.

WORK HOUR RULES

1. All employees punch in at 8:00 a.m., or earlier, take a half hour for lunch, and punch out at 4:30 p.m. or later.
2. Employees punching in more than 15 minutes late lose a half-hour's pay.
3. Variations of a few minutes before or after 8:00 a.m., 12:00 or 12:30, and 4:30 p.m. are ignored.
4. Employees working more than 8 hours a day are paid time-and-a-half for overtime.
   a. An employee earning $4.00 per hour earns $6.00 per hour for overtime — $4.00 regular pay plus one half of $4.00, or $2.00 more, for overtime.
   b. Overtime pay is carried out to three decimal places. For example: $2.85 per hour times 1.5 equals $4.275 per hour for overtime.

PROCEDURE

1. **CLEAR MACHINE.** On **Marchant,** set decimal control lever at "3".
2. **INSPECT "IN" HOURS** to determine whether a late penalty of a half hour should be imposed. In Problem 2, John Stover punched in at 8:17 which is 2 minutes in excess of the allowable 15 minutes, hence his Reg. Hrs. are 7½, not 8.

1

No. 172 S.S. #575-36-917 Per. 9/4/__
Name William Stevens Hr. Rate 2.80

	Amount	Deductions	
Reg. Hrs.		With. Tax	12.10
O.T. Hrs.		F.I.C.A.	7.36
Gross Pay		Insur.	.65
Less:		Health	.26
Deductions		Other	2.00
Net Pay		Total	

	IN	OUT	IN	OUT	REG.	O.T.
M.	8:12	12:01	12:33	4:33		
T.	7:58	12:02	12:31	4:35		
W.	7:55	12:03	12:33	4:30		
T.	7:58	12:00	12:35	7:30		
F.	8:00	12:01	12:33	8:30		
Total						

2

No. 173 S.S. #766-47-816 Per. 9/4/__
Name John Stover Hr. Rate 4.20

	Amount	Deductions	
Reg. Hrs.		With. Tax	22.70
O.T. Hrs.		F.I.C.A.	11.58
Gross Pay		Insur.	.65
Less:		Health	.26
Deductions		Other	5.00
Net Pay		Total	

	IN	OUT	IN	OUT	REG.	O.T.
M.	8:12	12:01	12:33	4:33		
T.	8:02	12:00	12:32	4:34		
W.	8:10	12:02	12:35	8:30		
T.	8:17	12:00	12:30	9:30		
F.	8:00	12:00	12:33	4:35		
Total						

3

No. 174 S.S. #856-82-816 Per. 9/4/__
Name Victor Stone Hr. Rate 3.40

	Amount	Deductions	
Reg. Hrs.		With. Tax.	14.00
O.T. Hrs.		F.I.C.A.	7.98
Gross Pay		Insur.	.65
Less:		Health	.26
Deductions		Other	None
Net Pay		Total	

	IN	OUT	IN	OUT	REG.	O.T.
M.	8:20	12:00	12:33	4:33		
T.	8:00	12:02	12:35	7:33		
W.	8:00	12:00	12:36	4:32		
T.	8:00	12:01	12:30	4:35		
F.	8:01	12:02	12:33	4:30		
Total						

4

No. 175 S.S. #813-31-123 Per. 9/4/__
Name Sam Tonnelli Hr. Rate 4.55

	Amount	Deductions	
Reg. Hrs.		With. Tax	26.10
O.T. Hrs.		F.I.C.A.	10.17
Gross Pay		Insur.	.65
Less:		Health	.26
Deductions		Other	7.50
Net Pay		Total	

	IN	OUT	IN	OUT	REG.	O.T.
M.	8:00	12:00	12:30	4:35		
T.	8:03	12:03	12:33	6:30		
W.	7:58	12:00	12:35	4:30		
T.	7:57	12:01	12:33	4:35		
F.	7:59	12:00	12:32	4:30		
Total						

JOB NO. 18 / CONTINUED

Instructions for Timed Drill:

a. **Marchant,** set the decimal control lever at "3".
b. Compute O.T. rate to three decimal places — rate of 3.35 × 1.5 equals 5.025.
c. Compute all O.T. rates and write them over O.T. Hrs. **before** starting the Timed Drill.
d. Study line one below.

TIMED DRILL

Finished at _____ o'clock
Started at _____ o'clock
Subtract _____ minutes required

TIMED DRILL

No.	M.	T.	W.	T.	F.	Reg. Hrs.	O.T. Hrs.	Rate	Reg. Pay	O.T. Pay	Gross Pay
1	8	9	7	10	8	39	5.025 3	3.35	130.65	15.08	145.73
2	9	8	8	10	6	38	3	4.45	169.10	20.03	189.13
3	8	8	8	8	8	40	0	5.00	200.00	—	200.00
4	10	8	8	9	10	40	5	4.00	160.00	30.00	190.00
5	8	8	8	6	8	38	0	3.35	127.30	—	127.30
6	8	9	10	8	8	40	3	4.45	178.00	20.03	198.03
7	8	7	9	10	10	39	5	5.00	195.00	37.50	232.50
8	8	8	8	8	8	40	0	4.00	160.00	—	160.00

FREE 50

18 PAYROLL COMPUTATIONS

3. DETERMINE REGULAR HOURS, which should be 8 hours, unless decreased by lateness penalty. Enter 8 in space provided.

4. DETERMINE O.T. HOURS — time beyond 4:30 p.m.
a. In Problem 1, on Thursday, William Stevens worked to 7:30, or 3 hours overtime. Enter 3 in the O.T. column.
b. On Friday, he worked to 8:30, or 4 hours overtime. Enter 4 in the O.T. column.

5. COMPUTE PAY for Reg. Hrs. and O.T. Hrs.:
a. Add figures in Reg. column. Enter total, 40, in space provided. Also enter it alongside Reg. Hrs. above.
b. Add figures in O.T. column; enter total, 7, in space provided. Also enter it alongside O.T. Hrs. above.
c. Multiply Reg. Hrs. by $2.80; enter amount, 112.00, in Amount column.
d. Multiply O.T. Hrs. by $4.20; enter amount, 29.40, in Amount column.
e. Add Reg. Hrs. amount and O.T. Hrs. amount to get Gross Pay, 141.40. Enter it in the space provided.

6. COMPUTE NET PAY:
a. Add figures in Deductions column. Enter sum, 22.37, alongside "Deductions" in the first column, and next to "Total" in the second column.
b. Subtract amount of deductions from gross pay to get net pay of 119.03.

7. COMPLETE REMAINING PROBLEMS, problems 2, 3, and 4, following the same steps.

8. COMPLETE THE TIMED DRILL as usual. Use Grading Scale No. 4 on page 187 to determine your grade.

9. GIVE JOB TO INSTRUCTOR when completed.

19 MARKUP PERCENT

TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

JOB NO. 19
MARKUP PERCENT

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To present the procedure for computing the percentage of markup. (Markup is the difference between cost and selling price.)

PROCEDURE

To do Problem 1, follow these instructions:

1. **CLEAR MACHINE.** On **Marchant** and **Remington Rand,** set the decimal control or indicator lever at "3." On the 104, move red decimal pointer between the third and fourth vertical markers. On **Monroe,** set quotient cut-off at "5," if necessary. On **Victor,** move control to (÷).
2. **ENTER SELLING PRICE,** 146.90, and 3 zeros 146.90000 (on **Marchant,** 146.900), and
   a. **Marchant,** depress (DIVID ÷) key.
   b. **Monroe,** depress (÷) key, if necessary; then the (+) key.
   c. **Remington Rand,** depress plus (+) bar. On the 104, depress the division (÷) key.
   d. **Underwood-Olivetti,** depress plus (+) bar.
   e. **Victor,** depress motor bar.
3. **ENTER COST,** 123.45, on the keyboard, and on the:
   a. **Marchant,** depress 1 zero and the equals (=) key.
   b. **Monroe,** depress (÷) and/or (≒) keys. On some models, depress the (STOP) key when indicator reaches "9," one more than there are figures in the dividend.
   c. **Remington Rand,** depress the positioning (←) key three times (8 figures in the dividend less 5 in the divisor, equals 3 — number of times positioning key is depressed), then depress the divide (÷) key. On the 104, merely depress the division (÷) key.
   d. **Underwood-Olivetti,** depress divide equals (≒) key.
   e. **Victor,** depress the motor bar.

THREE BROTHERS DEPARTMENT STORE
SALES SUMMARY
Week Ending September 15, 19—

No.	Article	Cost	Selling Price	Percent of Markup	Quantity	Total Sales Amount
1	Portable Tape Recorder	123.45	146.90		8	
2	17-Jewel Wrist Watch	42.35	95.50		31	
3	17-Jewel Wrist Watch	27.75	55.98		76	
4	Black Persian Lamb Coat	722.50	959.50		8	
5	Mouton Lamb Coat	139.36	248.98		18	
6	Let-out Muskrat Cape	212.42	346.50		21	
7	Four-skin Marten Scarf	209.56	356.98		56	
8	Sheared Beaver Coat	797.70	950.75		12	
9	Sheared Beaver Jacket	326.70	595.50		34	
10	Bathroom Scales	5.30	7.95		89	
11	Platform Rocker	47.19	63.95		13	
12	Victoria Arm Chair	103.13	139.95		43	
13	Pullman Davenport	305.80	499.50		15	
14	Cocktail Table	33.26	69.95		37	
15	Chairside Table	26.76	51.95		29	
16	Chrome Dinette Set	165.30	298.95		23	
17	Four-Drawer Chest	130.56	238.75		34	
18	Winthrop Desk	152.95	272.50		18	

JOB NO. 19 / CONTINUED

TIMED DRILL

Instructions:

a. Set decimal controls at "3."
b. Complete percent of markup and total sales amount.
c. Round off percents to two decimals.

Finished at _____ o'clock

Started at _____ o'clock
_____ minutes

Subtract _____ required

SALES SUMMARY
Week Ending September 15, 19—

No.	Article	Cost	Selling Price	Percent of Markup	Quantity	Total Sales Amount
1	Necklace	25.00	35.50	42%	16	568.00
2	Pins	39.00	65.95	69%	18	1,187.10
3	Bracelets	64.00	75.85	19%	12	910.20
4	Earrings	16.45	25.50	55%	12	306.00
5	Link Choker	26.48	56.98	115%	15	854.70
6	Pearl Pins	42.95	55.50	29%	18	999.00
7	Pearl Necklace	22.75	35.95	58%	23	826.85
8	Diamond Watches	185.97	249.95	34%	11	2,749.45
9	Wrist Watches	35.00	55.95	60%	14	783.30
10	17-Jewel Watches	125.00	250.98	101%	13	3,262.74

4. **QUOTIENT PRINTS** automatically with the remainder. The quotient is 1189 and the remainder, 11795, for Problem 1.
5. **DETERMINE NUMBER OF DECIMAL PLACES** in the quotient by following this rule: The number of decimal places in the dividend minus the number of decimal places in the divisor equals the number of decimal places in the quotient. The number of decimal places in the dividend 146.90000 is five. The number of decimal places in the divisor 123.45 is two. (5 — 2 = 3) The number of decimal places in the quotient is, therefore, three.
6. **POINT OFF THREE PLACES** if your machine does not print the decimal point. You will get 1.189. Round off the quotient to two decimal places, 1.19, and change the decimal to percent — 119%.
7. **SUBTRACT** 100% from 119% to get the percent of markup, 19%. Record it in the space provided.
8. **MULTIPLY** the selling price, 146.90 by the quantity, 8, and record the product, 1,175.20, in the last column.
9. **COMPLETE PERCENTAGE AND AMOUNT** calculations for lines 2 to 18 by following the same procedure.
10. **COMPLETE THE TIMED DRILL** as usual. Use Grading Scale No. 4 on page 187 to determine your grade.
11. **GIVE JOB TO INSTRUCTOR** when completed.

20 REVIEW

TOUCH-OPERATED, TEN-KEY PRINTING CALCULATOR

JOB NO. 20
REVIEW

Name _____
Period _____ Date _____
No. of Errors _____ Rating _____

Time Completed _____
Time Started _____
Minutes Required _____

AIMS:

1. To review the operating principles presented in Job Nos. 11 through 19.
2. To determine the proficiency acquired in the operation of ten-key printing calculators.

PROCEDURE

1. **CLEAR MACHINE,** and number each problem.
2. **DO EACH PROBLEM** only once. Record the answer directly below or beside each problem, and in the Answers column at the right.
3. **READ INSTRUCTIONS** on pages 55 and 56 before starting this job.
4. **RECORD TIME** the job was started, the time it was completed, and the number of minutes required to complete the job in the spaces provided. In recording the time, drop fractions of a minute smaller than ½. Fractions larger than ½ minute but less than one full minute are recorded as ½ minute. Subtract to get the time required for completion of the job.
5. **DO JOB AGAIN,** if you have the time. Try to improve your speed.
6. **ARRANGE THE TAPES** in numerical order, and attach them to the upper left corner of the job sheet.
7. **WRITE YOUR NAME** and other information required in the spaces provided at the upper center of the job sheet.

Touch-add:

1	2	3	4	5
3.25	585.33	658.94	214.86	2,567.32
7.89	156.80	190.80	396.68	4,839.09
5.48	540.35	185.37	363.73	2,795.56
3.90	746.25	389.07	382.93	3,873.09
5.56	190.86	396.73	389.42	4,793.64
3.27	673.62	483.95	426.35	1,903.96
4.83	987.06	178.84	634.92	3,805.98
2.85	563.82	269.14	684.26	9,584.63
2.14	696.57	165.35	463.91	2,906.48
2.75	325.80	435.27	259.90	1,357.89
5.48	635.41	219.07	185.75	8,940.63
7.50	634.92	563.17	574.80	4,673.52
5.78	507.83	970.18	214.35	7,563.95
9.45	352.18	536.80	760.89	5,030.50
2.67	864.21	390.70	351.91	3,572.17
8.32	153.29	306.18	910.68	6,894.57
1.65	473.84	407.23	463.80	5,218.09
8.90	546.35	605.98	375.73	3,592.29
3.25	524.48	795.83	229.63	9,476.91
4.83	478.36	528.54	643.10	1,329.82
4.86	467.32	215.63	732.71	1,544.38
5.78	478.36	253.58	683.21	9,077.66
3.24	654.63	290.45	452.29	4,622.98
6.84	247.38	674.32	806.00	7,890.07
1.97	215.32	675.33	547.19	4,300.87

ANSWERS

1 _____
2 _____
3 _____
4 _____
5 _____

53

JOB NO. 20 / CONTINUED

Subtract:

6	7	8	9	10
1,865.12	946.17	1,476.25	8,456.17	4,176.85
−21.98	−123.25	−961.47	−376.05	−932.41
11	**12**	**13**	**14**	**15**
6,144.75	1,234.18	2,456.11	1,984.41	4,913.50
−904.01	−3,176.50	−5,112.92	−3,211.02	−916.11

Multiply:

16. 676 Units @ $145.67 each _____
17. 476 Units @ 96.66 each _____
18. 814 Units @ 9.86 each _____
19. 765 Units @ 102.50 each _____
20. 96 Units @ 76.98 each _____

Divide amount of Sales by Number of Customers:

21. Sales of $1,785 to 25 Customers _____ Average per Sale
22. Sales of $3,476 to 102 Customers _____ Average per Sale
23. Sales of $5,103 to 91 Customers _____ Average per Sale
24. Sales of $2,788 to 112 Customers _____ Average per Sale
25. Sales of $7,856 to 117 Customers _____ Average per Sale

54

ANSWERS

6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____

20 REVIEW

8. GIVE JOB TO INSTRUCTOR when completed.

NOTE: Before proceeding to the next job, ask your instructor about Test No. 4. Test Nos. 3 and 4 should be completed before you start another job.

ON THE JOB

Confusion causes wasted time.

Be sure you understand
what you are to do before you begin.

20 REVIEW

To complete Problem 26, on page 55, you should:

1. **SET DECIMAL CONTROL** at "2".
2. **MULTIPLY QUANTITY,** 52 by the unit price, 1.89.
3. **RECORD ANSWER,** 98.28, in the space provided.
4. **MULTIPLY QUANTITY** by the unit price for the remaining items.
5. **ADD NUMBERS** in the "Amount" column, and record the sum in the space provided.
6. **MULTIPLY THE TOTAL** obtained in Step 5 by the net decimal equivalent. The net decimal equivalent of a chain discount of 10-15-5 is .72675. Record the answer in the **last** space provided. (Round off the answer to the nearest cent.)
7. **SUBTRACT** the "Net" amount from the "Total" to get the amount of the discount. Record the discount in the space alongside the discount of 10-15-5.

JOB NO. 20 / CONTINUED Name _____ Period _____

Complete the following invoice:

26

Phone: 212-432-1400

WHOLESALE DRY GOODS SUPPLY
1946 Broadway
New York, New York 10415

No. 645

Sold to: THREE BROTHERS DEPT. STORE
229 Presidential Boulevard
Jersey City, New Jersey 07142

Terms: 2/10 N/30

Sold by Neil De Luca

Shipped Via Dobbs Trucking Service

Quantity	Stock No.	Description	Unit Price	Amount
52 yds.	114	Striped Denim	1.89	
28 yds.	531	Dress Linen	2.87	
35 yds.	379	Rayon Print	2.25	
42 yds.	97	Flowered Percale	1.53	
37 yds.	9-A	Wool Crepe	7.85	
45 yds.	204	Orlon	3.15	
47 yds.	1-B	Shantung	4.38	
		Total		
		Less: 10-15-5		
		Net		

JOB NO. 20 / CONTINUED

Verify the following invoice:

27

Phone: 212-432-1400

WHOLESALE DRY GOODS SUPPLY

1946 Broadway

New York, New York 10415

No. 837

Sold to: SWENSON'S DRY GOODS SHOPPE
297 Grove Street
North Bergen, New Jersey 07456

Terms: 2/10 N/30

Sold by John Fucik

Shipped Via Dobbs Trucking Service

Quantity	Stock No.	Description	Unit Price	Amount
35	145 A	Plastic Tablecloths 54 x 54	1.10	38.50
75	256 C	Chenille Bedspreads 84 x 112	3.50	262.50
125	117 E	Fiberglas Curtains 84 x 54	7.00	875.00
15 doz.	76 F	Bath Towels 24 x 44	16.00	240.00
15 doz.	76 A	Hand Towels 16 x 26	15.00	225.00
15 doz.	76 C	Wash Towels 12 x 12	8.00	120.00
12 doz.	106	Merino Wool Blankets	24.00	288.00
25 doz.	514	Supercale Sheets 63 x 104	21.00	525.00
		Total		2,574.00
		Less 20-10-5		813.38
		Net		1,761.62

20 REVIEW

To verify the computations in Problem 27, you should:

1. **SET DECIMAL CONTROL** at "2".
2. **MULTIPLY QUANTITY,** 35, by the unit price, 1.10.
3. **CHECK EXTENSION.** If the extension shown on the invoice is correct, place a check mark (✓) next to the amount. If it is incorrect, draw a line through the incorrect amount, and neatly write the correct amount above it.
4. **VERIFY** each of the remaining extensions and the total.
5. **MULTIPLY THE TOTAL,** 2,574.00, by the net decimal equivalent. The net decimal equivalent of a chain discount of 20-10-5 is .684. If the computation is correctly listed, check it off; if there is an error, correct it.
6. **SUBTRACT** the "Net" amount from the "Total" to verify the discount. Correct any errors.

OFFICE MACHINES COURSE

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

HIGHLIGHTS

Electronic calculators can be classified as: (1) non-listing with viewing screens, or (2) listing with printed tapes. The non-listing models outnumber those with tapes. The ten jobs that follow contain operating instructions for two non-listing and one listing electronic calculators. Detailed step-by-step instructions for solving practical business problems on the **Friden, Marchant,** and **Monroe** calculators will be presented. General instructions for basic operations on six other types of electronic calculators are also provided on pages 60-61.

The most prominent feature of the non-listing calculators is a viewing screen with one to four dials and/or registers that change noiselessly as a problem is worked out.

Both listing and non-listing calculators have conventional ten-key keyboards, decimal keys, and functional keys that program the calculators for selected mathematical processes. Both groups can store in the memory units any keyboard number or calculated result, and recall it as many times as required.

Electronic calculators are becoming increasingly popular because of their quietness, durability, and versatility.

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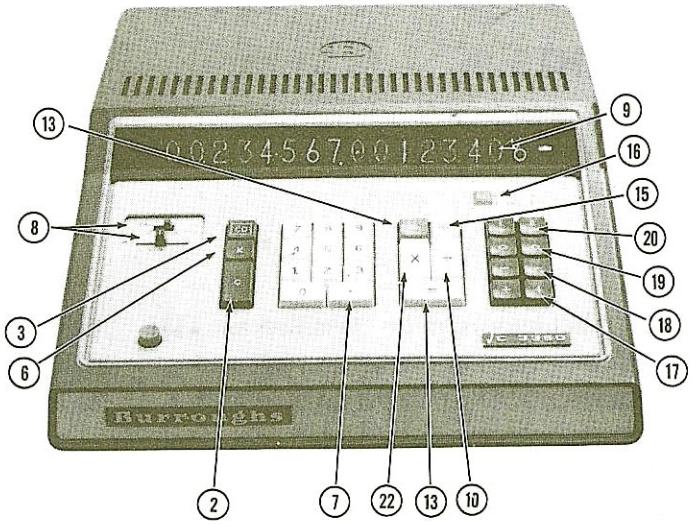
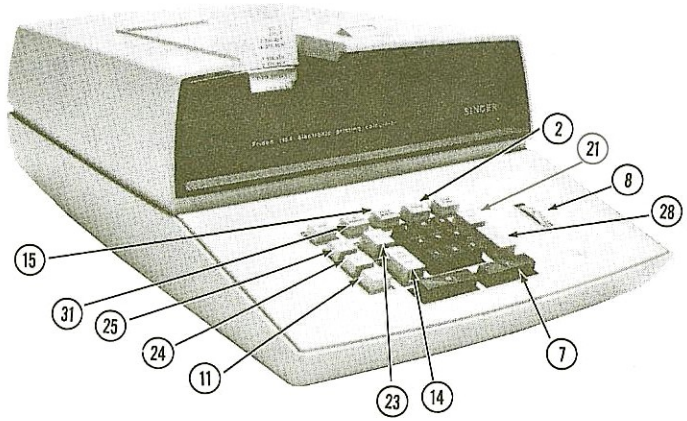
TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

PART NO. **MACHINE PARTS**

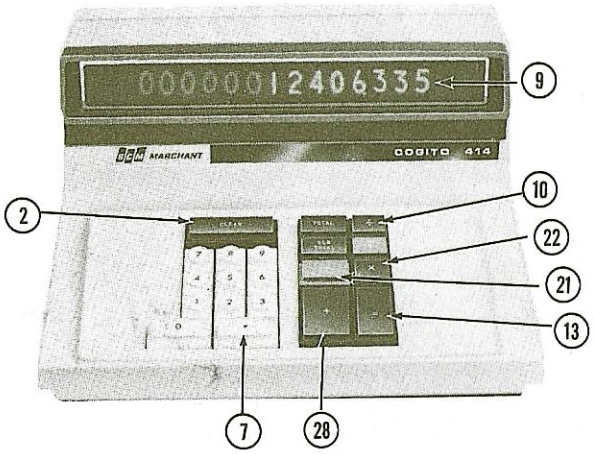
1 Accumulation Keys and Controls
2 All Clear
3 Clear Display Key
4 Clear Entry Key
5 Clear Memory Key
6 Constant Key or Switch
7 Decimal Point Key
8 Decimal Point Selector
9 Display Screen
10 Division Key
11 Divide Equals Key
12 Enter
13 Equals Key
14 First Number Print Key
15 From Memory
16 Memory Light
17 Memory Plus Key
18 Memory Minus Key
19 Memory Subtotal Keys
20 Memory Total Keys
21 Minus Key
22 Multiplication Key
23 Multiply Equals Key
24 Multiply Minus Key
25 Multiply Plus Key
26 Negative-Equals Key
27 On-off Switch
28 Plus Key
29 Round-off Switch
30 Shift Key
31 To Memory



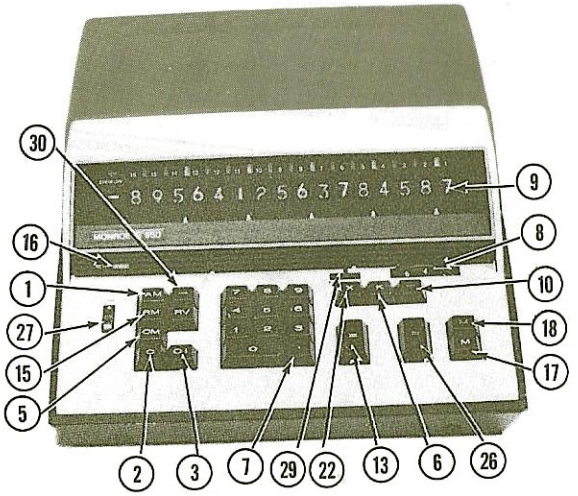
Burroughs C3300 Series



Friden 1154

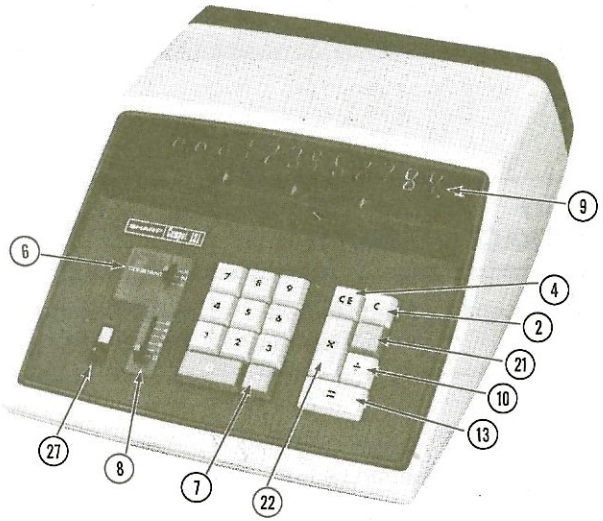


Marchant 414

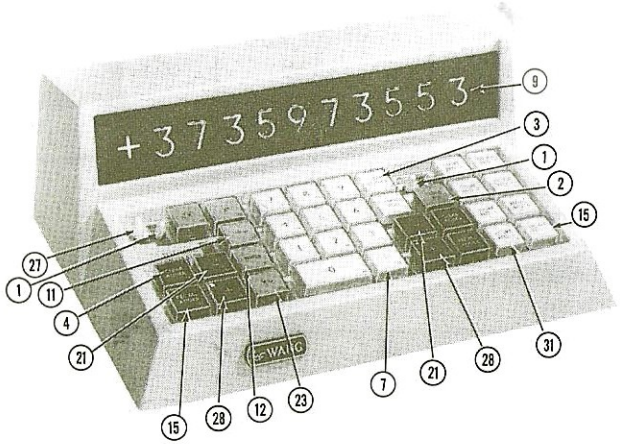


Monroe 950

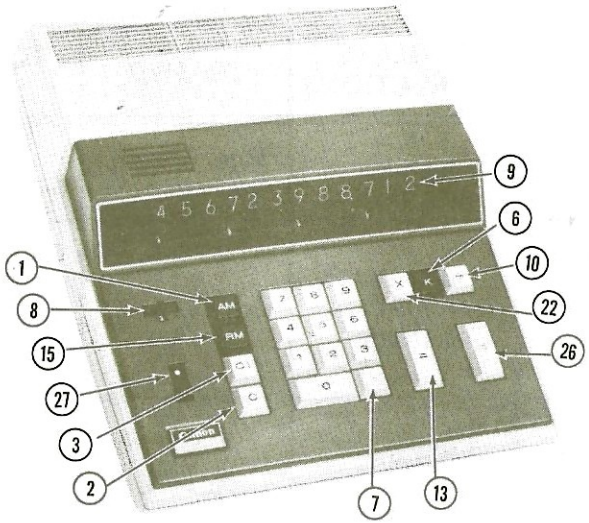
TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR



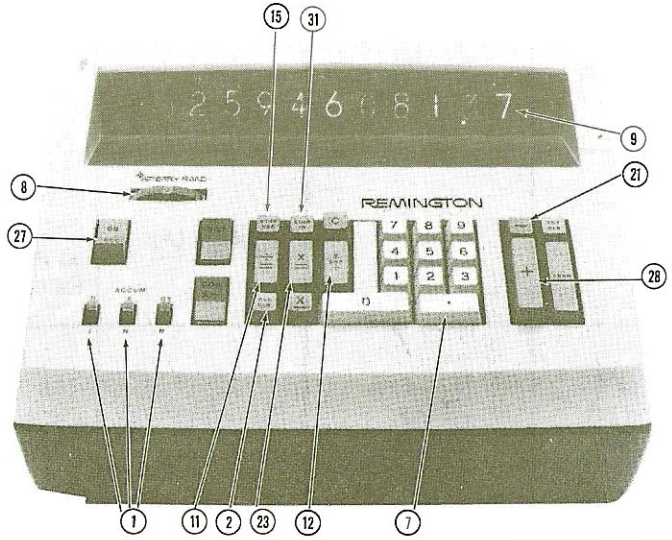
Sharp



Wang



Canon 121



Remington EDC III

PART NO.	MACHINE PARTS
1	Accumulation Keys and Controls
2	All Clear
3	Clear Display Key
4	Clear Entry Key
5	Clear Memory Key
6	Constant Key or Switch
7	Decimal Point Key
8	Decimal Point Selector
9	Display Screen
10	Division Key
11	Divide Equals Key
12	Enter
13	Equals Key
14	First Number Print Key
15	From Memory
16	Memory Light
17	Memory Plus Key
18	Memory Minus Key
19	Memory Subtotal Keys
20	Memory Total Keys
21	Minus Key
22	Multiplication Key
23	Multiply Equals Key
24	Multiply Minus Key
25	Multiply Plus Key
26	Negative-Equals Key
27	On-off Switch
28	Plus Key
29	Round-off Switch
30	Shift Key
31	To Memory

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

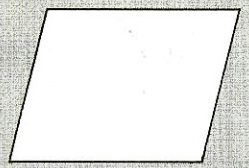
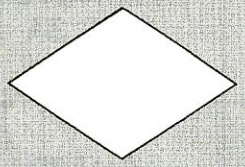
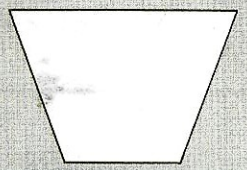
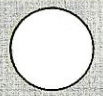
OPERATIONAL CHART FOR ADDITIONAL ELECTRONIC CALCULATORS

MACHINES	TO CLEAR MACHINE	TO SET FOR DECIMALS	TO MAKE CORRECTIONS	TO ADD	TO REPEAT ADD	TO SUBTRACT	TO MULTIPLY	TO DIVIDE
ALL MACHINES	**Depress:**	**Set Decimal Selector to:**	**Depress:**	**Enter Addend, Depress:**	**Enter Item, Depress:**	**Enter Minuend, Depress:**	**Enter Multiplicand, Depress (×)**	**Enter Dividend, Depress (÷)**
BURROUGHS C 3300	(C), (!), (!!)	Desired point; machine will round off automatically.	(CD) and reenter correctly.	Plus (±).	(×). Enter times repeated, depress (+1). To get total, depress (!).	(±). Enter subtrahend, depress red (—). Credit balance, (—) lights up.	Enter multiplier, depress (±).	Enter divisor, depress (±).
N C R 18-2	(C), (C1), (C2)	Desired point, set roundoff lever at 5/4.	(CI) and reenter correctly.	Plus (+).	(M1) as many times as repeated. Depress (R1) to get total.	Plus (+). Enter subtrahend, depress (—). Cr. balance, (—) lights up.	Enter multiplier, depress (=).	Enter divisor, depress (=).
REMINGTON EDC 3A	(ALL CLR) (TOT CLR)	Desired point. Manually, round off to desired decimal.	(C) and reenter correctly.	Plus (+).	Plus (+) as needed.	Plus (+). Enter subtrahend, depress red (—). Cr. balance, (—) lights up.	(ENT). Enter multiplier, depress (×).	(ENT). Enter divisor, depress (÷).
SHARP COMPET 241	(C) and (CM)	Desired point, set roundoff at 5/4.	(CE) and reenter correctly.	Black (=).	(K). Enter item, depress black (=) as needed. Release (K).	Black (=). Enter subtrahend, depress red (=). Cr. balance, (—) lights up.	Enter multiplier, depress black (=).	Enter divisor, depress black (=).
TOSHIBA BC 1212	(C)	0, 2, or 4. Round off manually.	(EX) and reenter correctly.	Plus equals (±).	(×). Enter times repeated, depress (±).	(±). Enter subtrahend, depress (—). When (—) lights up, depress (—) twice.	Enter multiplier, depress (±).	Enter divisor, depress (±).
VICTOR 1400-321	(C ALL)	Desired point, machine rounds off automatically.	(C) and reenter correctly.	Plus (+).	Plus (+) as needed.	Plus (+). Enter subtrahend, depress (—). Cr. balance, (—) lights up.	Enter multiplier, depress (=).	Enter divisor, depress (=).

OPERATIONAL CHART FOR ADDITIONAL ELECTRONIC CALCULATORS

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

TO CHAIN MULTIPLY	TO MULTIPLY BY A CONSTANT	TO GET DISCOUNT AND NET AMOUNT	TO PRORATE EXPENSES AND ACCUMULATE PRODUCTS	MACHINE
Enter First Multiplicand, Depress (×) or:		**Enter Gross Amount, Depress:**	**Divide, to 6 Decimals, Amount to be Prorated by Sum of Sales**	**ALL MACHINES**
Enter first multiplier, depress (×). Repeat for other multipliers. After last multiplier (±).	Depress (K). Enter 1st multiplicand, depress (×). Enter constant, depress (±). Enter 2d multiplicand, depress (±). Repeat, then release (K).	(+1) and (×). Enter discount as a decimal, depress (—). Record discount. Depress (I).	Depress (+I). Enter 1st dept. sales, depress (×), (RC), (K), and (+II). Enter 2d dept. sales, depress (+II). Repeat for each dept. Depress (II) for total.	**BURROUGHS C 3300**
Enter 1st multiplier, depress (=) and (×). Repeat for other multipliers.	Enter constant, depress (×). Enter 1st multiplicand, depress (=). Enter 2d multiplicand, depress (=). Repeat for remaining ones.	(M1) and (×). Enter discount as a decimal, depress red (M1). Record discount. Depress (R1).	Depress (×). Enter 1st dept. sales, depress black (M1). Enter 2d dept. sales, depress black (M1). Repeat for each dept. Depress (RI) for total.	**N C R 18-2**
(ENT). Enter 1st multiplier, depress (±). Repeat for other multipliers.	Enter constant, depress (ENT), (CON). Enter 1st multiplicand, depress (±). Repeat for remaining multiplicands.	(STOR IN) and (ENT). Enter discount as a decimal, depress (±). Record discount. Depress (STOR USE) for net amount.	Engage (GT) and (CON). Depress (ENT). Enter 1st dept. sales, depress (±). Repeat for each dept. To get total, depress (STOR USE), (T CLR).	**REMINGTON EDC 3A**
Enter first multiplier, depress (×). Depress (×) again. Enter 2d multiplier, depress (×). Repeat for other multipliers.	Enter constant, depress (K), (×). Enter 1st multiplicand, depress black (=). Repeat for remaining multiplicands. Release (K).	(×). Enter discount, depress black (=). Record discount. Depress red (=).	Depress (K) and (×). Enter first dept. sales, depress (M+). Repeat for each dept. To get total, depress (MR). Release (K).	**SHARP COMPET 241**
Enter 1st multiplier, depress (±) and (×). Repeat for other multipliers.	Enter constant, depress (K), (×). Enter 1st multiplicand, depress (±). Repeat for remaining multiplicands. Release (K).	(×). Enter discount as a decimal, depress (±). Record discount. Enter gross amount, depress (—). Ignore (—) sign.	Depress (×), (K), and (A). Enter 1st dept. sales, depress (±). Enter 2d dept. sales, depress (±). Repeat for each dept. To get total, depress (R).	**TOSHIBA BC 1212**
Enter first multiplier, depress (=), (×). Enter 2d multiplier, depress (=) and (×). Repeat for other multipliers.	Enter constant, depress (×). Enter 1st multiplicand, depress (=). Repeat for remaining multiplicands.	(M+). Enter discount as a decimal, depress (×), (=). Record discount. Depress (M—), record net amount.	Depress (×). Enter first dept. sales, depress (M+). Enter 2d dept. sales, depress (M+). Repeat for each dept. Total appears in upper dials.	**VICTOR 1400-321**

SYMBOL	SYMBOL NAME	REPRESENTS
	Terminal	The beginning or the end of a problem.
	Input/ Output	The making of information available to the machine for processing. For example, entering a number into the machine for processing (input); or, the printing of an answer by the machine (output).
	Process	The processing of information by the machine which eventually results in the solution of the problem.
	Decision	A point at which a choice must be made. For example, deciding whether or not additional addends must be entered in order to solve a problem.
	Manual Operation	A procedure that must be performed by the operator independently of the machine. For example, recording the answer to a problem in the proper blank.
	Connector	An exit from or an entry into another part of the problem.
	Flowline	The direction of sequence of operations leading to the solution of a problem.

FLOWCHARTS

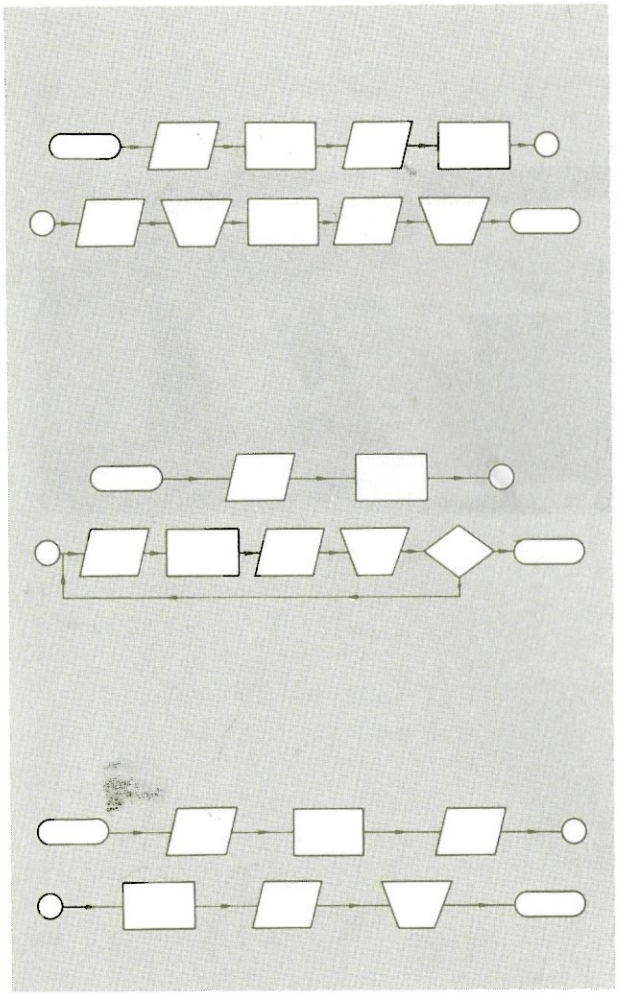
In today's business world, machines are being used more and more to solve problems which were once done manually. Machines are more accurate, they are faster, and they free workers for other jobs. To be sure that machines are used in the most efficient manner, the most logical and systematic approach to the solution of a problem must be found.

Flowcharting is a method of depicting the solution of a problem. It shows pictorially each of the steps to be performed and the order in which they are to be performed.

A flowchart is a diagram using standard symbols and brief statements of the operations to be performed at each point. Each symbol is a visual representation of the operation to be performed. Each brief explanation tells the step to be performed, such as "clear the machine," "obtain the answer," etc. When the symbol is combined with the brief statement, a clear explanation is presented of how to solve the problem.

Flowcharts have the following advantages:

1. They make problems easier to understand and solve.
2. They require good planning which reduces wasted time.
3. They provide a means of communicating between persons working the same problem.
4. They enable a job to be done in parts. If it is necessary to stop at a particular point, reference to the flowchart will tell what has been done and what remains to be done.



HOW TO USE THE FLOWCHARTS

Flowcharting is used extensively in data processing using computers. Electronic calculators are not computers in the strictest sense, but they are probably more closely related to computers than other types of adding and calculating machines. For that reason, flowcharts are used only in the electronic calculator section of this textbook.

Although the symbols used in flowcharts vary, the purpose is still the same — to present the steps in solving a problem. Only through the use of standard symbols, those symbols recognized everywhere, can flowcharts be read by anyone who has knowledge of flowcharting. So that you may become familiar with some of those symbols which are recognized as being universal, seven standardized basic symbols are used in the exercises.

In this book, detailed step-by-step instructions, as well as flowcharts, are given for the problems. The flowchart symbols are matched by number with the step-by-step instructions so that you can refer to each without difficulty.

To be able to solve the problems with fewer difficulties and to get the most benefit from the flowcharts, follow these steps:

1. Always read through the step-by-step instructions carefully before beginning to solve the problems. Follow the flowchart diagram as you read through the instructions so that you can see the logical arrangement of the steps necessary for the solution of the problems.
2. Work the first problem or two in each job following both the step-by-step instructions **and** the flowchart.
3. As you proceed, begin to rely more on the flowchart than the printed instructions. Refer to the printed instructions whenever clarification is necessary. Attempt to solve the problems by referring only to the flowchart after you understand the process.
4. Before completing the work in the job, you should be able to solve the problem with only an occasional glance at the flowchart.

When you have completed the electronic calculator section using the flowcharts, you should have a basic understanding of flowcharting — its purpose and its value. You should also be able to identify the seven basic flowcharting symbols used in the exercises. Finally, you should be able to use flowcharting to some degree in solving other problems similar to the ones you encountered in this section.

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

GENERAL INSTRUCTIONS

1. Read each job thoroughly before beginning.
2. Clear your desk of unrelated materials.
3. Position your calculator at a slight angle at the right of your desk. Place this book at the left of the calculator. Move book and machine to give you ease of reading and writing.
4. Sit erect, relax, with feet flat on the floor.
5. Place the first, second, and third fingers on the middle bank of keys — the 4, 5, and 6.
6. Now move these fingers up to the top bank of keys — the keys for 7, 8, and 9.
7. Bring your fingers back to the middle bank. Notice that the home keys, 4, 5, and 6, are deeper than those of the upper bank.
8. Reach down to the lower bank of keys — the keys for 1, 2, and 3.
9. Put the thumb on the zero bar, the little finger on the plus bar, and the first, second, and third fingers on the middle bank of keys. This is the home-key position from which you reach to all other keys.
10. Practice reaching up to 7 and down to 1 from 4. Your fingers should be curved slightly, and you should guide your first finger to the center of the keys for 7, 4, and 1.
11. With your second finger, practice reaching up to 8 from home key, 5, and down to 2.
12. Similarly, practice the third-finger reaches from home key, 6, to 9 and down to 3. Also reach down to the decimal key.
13. Practice until you can reach for the figures 1 to 9 without looking at your fingers.
14. Practice depressing the zero bar and the decimal key.
15. Strike the keys firmly in the center. You can strike only **one** key at a time; therefore, be sure to release quickly so that the next key can be depressed without waste of time.
16. If you happen to depress the wrong key and discover your error before depressing the plus (+) bar, eliminate the number by:
    Friden Listing: depressing the (CLEAR) key, located at upper left of "9" key.
    Marchant: depressing (Clear K) bar, located above the keyboard.
    Monroe: depressing the clear display key (C1), located to left of zero key.
17. If the error has been entered, clear the calculator and begin the problem again. In Job No. 22 you will be given detailed instructions for correcting such errors without clearing the calculator.
18. Read pages 62 and 63 pertaining to flowcharting. The flowcharts presented in each job should help you understand the system used to solve the problems.

Correct Hand Position

21 TOUCH ADDITION

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

JOB NO. 21 TOUCH ADDITION

Name_____ No. of Errors_____

Period_____ Date_____ Rating_____

AIM:

To develop proficiency in touch addition on electronic calculators.

PROCEDURE

1. **PREPARE MACHINE** for addition. Read pages 60 — 64 before beginning this job.

   a. Friden Listing Calculator

   (1) Push back (ON/OFF) switch lever, which is located under the lower right corner of the calculator.

   (2) Turn decimal point selector wheel, which is located at the upper right of the keyboard, to "2."

   (3) Clear the calculator by depressing the (CLEAR STACK) key, which is located at the upper right of the keyboard.

   b. Marchant Non-Listing Calculator

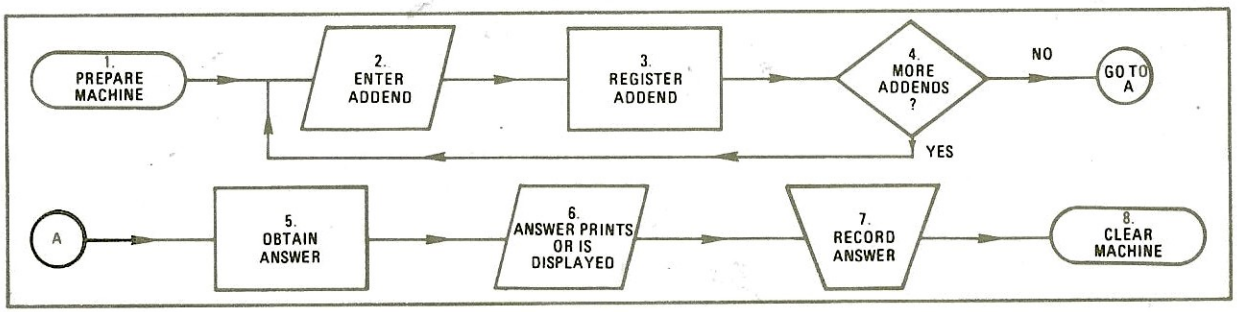
   (1) Push power switch lever, located under the right front side, forward.

   (2) Clear the calculator by depressing the (CLEAR) and (TOTAL) bars. Both are located above and to the right of the keyboard.

   c. Monroe Non-Listing Calculator

   (1) Depress white dot, located at upper left for "on"; lower part for "off".

   (2) Clear the calculator by depressing the clear memory (CM), the clear (C), and the clear display (C1) keys. They are located at the lower left of the keyboard.



1	2	3	4
44.40	45.60	66.60	44.40
55.50	54.60	55.50	55.50
66.60	46.50	44.40	66.60
44.50	64.50	45.60	40.55
45.40	56.40	54.60	50.44
46.40	65.40	64.50	60.55
55.40	44.50	46.40	44.05
54.50	55.40	65.40	55.06
66.40	66.50	40.55	66.04
65.50	50.44	50.44	64.05
544.60	549.84	533.99	547.24

5	6	7	8
47.50	58.50	69.60	66.69
74.60	58.40	96.06	44.47
57.40	85.40	69.56	55.58
74.50	58.60	46.90	99.96
54.70	45.80	56.09	77.74
45.70	65.80	47.69	88.85
47.60	85.80	58.96	45.96
64.70	48.50	74.69	59.64
67.40	54.80	85.96	49.69
57.40	68.40	69.47	96.54
591.50	630.00	674.98	685.12

ANSWERS

1 _____

2 _____

3 _____

4 _____

5 _____

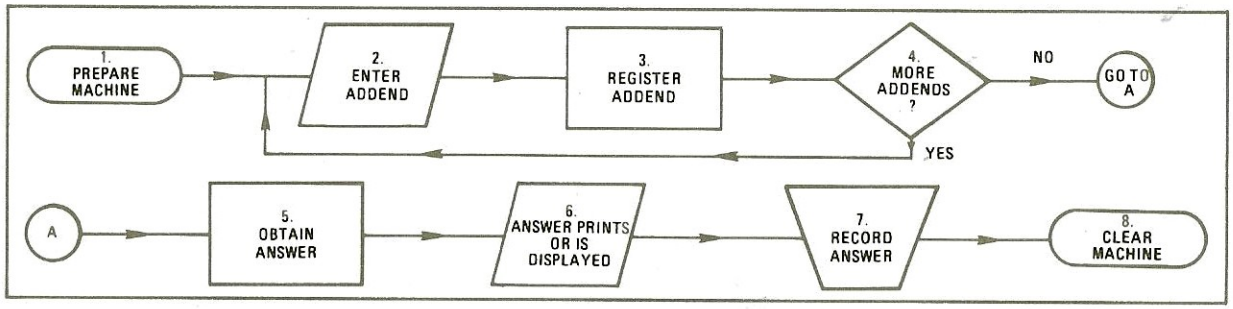
6 _____

7 _____

8 _____

65

JOB NO. 21 / CONTINUED



9	10	11	12
41.45	52.56	63.50	12.30
41.46	56.52	96.30	32.10
41.54	52.69	45.63	23.10
14.64	47.52	74.63	13.20
14.74	52.96	36.36	21.30
14.75	25.56	69.36	12.03
41.56	58.52	36.58	32.01
41.69	25.85	47.63	10.23
41.58	85.52	58.36	31.20
45.41	74.25	63.41	41.30

13	14	15	16
83.25	81.60	19.80	22.88
79.40	73.65	62.65	55.33
64.60	30.74	32.71	44.88
90.63	26.14	51.45	92.99
46.80	61.96	84.26	76.77
89.50	82.85	84.26	83.11
57.05	93.20	86.93	31.22
56.95	16.74	79.12	85.66
96.22	56.78	31.00	93.44
47.77	95.82	44.55	12.11

ANSWERS

9 338.82
10 531.95
11 591.76
12 228.77
13 712.17
14 619.48
15 576.73
16 598.39

21 TOUCH ADDITION

2. ENTER ADDEND using the touch method you practiced earlier to complete the problems in this job.

a. Enter 44.40, the first item in problem 1, by:
   (1) Using the first finger of the right hand to depress "4" twice.
   (2) Using the third finger to depress the decimal key.
   (3) Using the first finger to depress "4".
   (4) Using the thumb to depress the zero.

b. On non-listing machines, the addend is displayed at this point.

3. REGISTER ADDEND:

a. Friden Listing—With the first finger, depress (FIRST NMBR) key which is located to the left of the "1" key. The (FIRST NMBR) key is used **only** to register the first addend; all other addends are registered by depressing the plus (+) bar. The addend prints at this point.

b. Marchant—Depress the plus (+) bar.

c. Monroe—Depress the white equals (=) bar.

4. MORE ADDENDS? Work your way down the problem, entering and registering all other addends by the touch method. Depress the keys for each figure in the same order, left to right, that you follow to write numbers by hand.

5. OBTAIN ANSWER.

a. Friden Listing—Depress (PRINT) bar, located to the left of the "1" key.

b. Marchant — Depress (TOTAL) bar.

c. **Monroe —** Machine calculation has been completed at this point. No further operation is needed.

21 TOUCH ADDITION

6. ANSWER PRINTS OR IS DISPLAYED.

a. **Friden Listing**—The answer, 544.60=, is the last number printed on the tape.

b. **Marchant**—The answer, 544.60, appears in the display dials.

c. **Monroe**—The answer, 544.60, appears in the display dials.

7. RECORD ANSWER. Write the answer, 544.60, directly below the problem in the space provided, and immediately do the problem a second time. If the second answer is the same as the first, write it in the proper space in the Answers column.

If the second answer is different from the first, write it directly below the first answer, and do the problem again. Write the answer that proves to be correct in the Answers column.

8. CLEAR MACHINE.

a. **Friden Listing**—Depress (FIRST NMBR) bar for the first item of the next problem. This clears the calculator.

b. **Marchant**—Depress (CLEAR) and (TOTAL) bars.

c. **Monroe**—Depress the clear (C) key.

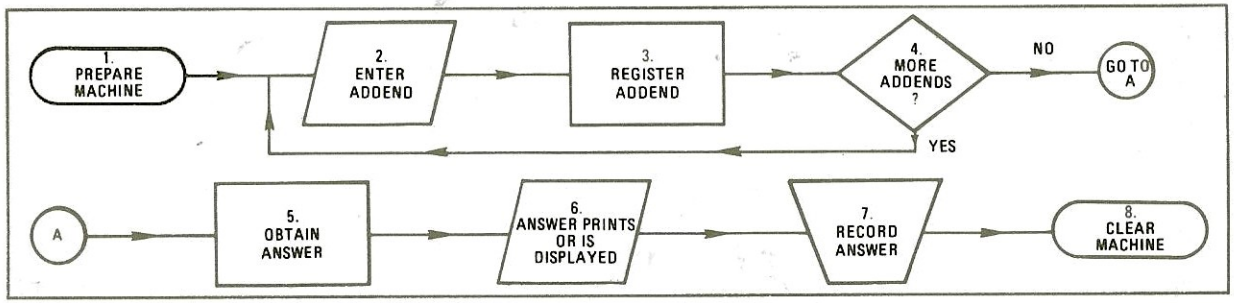
Follow steps 1 - 8 above to complete Problems 2 - 24.

To complete Problems 25 and 26, follow these steps using the procedures for addition given above:

1. **ADD EACH COLUMN VERTICALLY,** and record the total in the spaces provided under each column.
2. **ADD EACH LINE HORIZONTALLY,** and record the total in the spaces provided in the last column.
3. **VERIFY TOTAL.** The sum of the vertical "Total" column should equal the sum of the horizontal "Total" line.

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

JOB NO. 21 / CONTINUED Name_____ Period_____



17	18	19	20
.41	8.47	16.41	80.74
3.46	19.63	.83	141.47
174.96	.87	254.85	.97
2.25	25.84	5,148.63	3,989.79
75.50	.98	.76	.50
8,225.75	114.69	652.32	85.45
72.70	32.71	304.43	776.20
126.43	91.32	9.62	8,163.86
.12	4,519.26	.85	69.98
71.25	.75	382.35	3.60

21	22	23	24
143.47	22.15	8,725.43	29.75
39.75	195.94	659.52	4.73
263.68	81.14	.85	605.26
1.28	7,143.68	1.67	7,643.31
6.57	185.63	53.25	.25
93.12	22.91	952.01	1.65
172.42	5.20	80.10	47.85
9,278.85	.67	184.50	126.81
2.78	118.91	.75	.46
.88	93.46	1.85	3,045.65

ANSWERS

17 8,75-2.83
18 4,814.52
19 6771.05
20 130,312,56
21 10,002.80
22 7869.69
23 10,659.93
24 11,505.72

JOB NO. 21 / CONTINUED

25

MUTUAL DEPARTMENT STORES
Weekly Sales Report
September 7, 19—

Day of Week	Dept. A	Dept. B	Dept. C	Dept. D	Total
Monday	475.85	586.91	673.46	376.84	
Tuesday	986.13	681.98	347.82	561.75	
Wednesday	542.93	542.83	489.01	383.21	
Thursday	876.84	941.47	886.75	586.87	
Friday	656.89	309.60	209.15	310.15	
Saturday	2,786.75	1,486.70	2,486.70	3,486.02	
Total					

26

CITY DEPARTMENT STORES
Weekly Sales by Salesmen
June 7, 19—

Day of Week	Jones	Johnson	White	Watson	Total
Monday	375.25	482.41	678.02	261.63	
Tuesday	165.85	512.93	321.75	758.02	
Wednesday	963.01	175.83	485.26	414.76	
Thursday	234.85	861.12	189.65	134.02	
Friday	561.13	483.45	568.41	386.05	
Saturday	1,231.45	2,186.75	1,986.75	3,001.45	
Total					

6 8

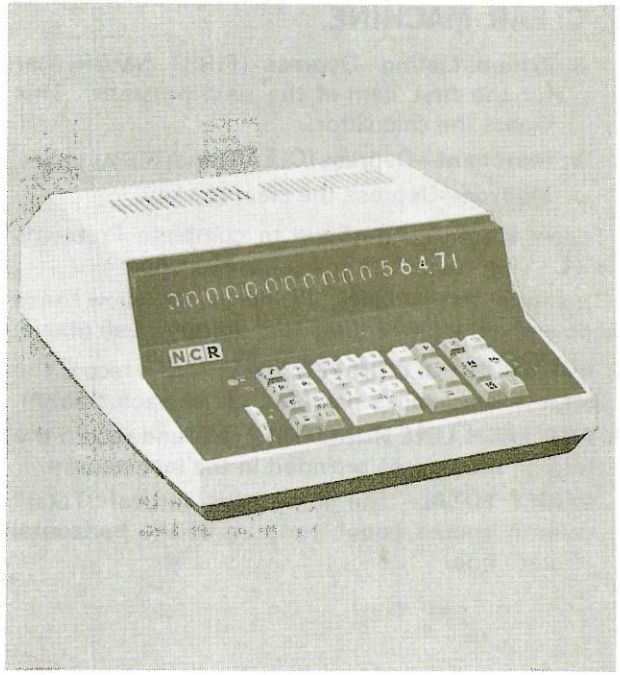
21 TOUCH ADDITION

When all problems have been completed:

1. **WRITE YOUR NAME** and any other information in the spaces provided.
2. **REMOVE THE PAGES** of the job at the perforation mark.
3. **ATTACH TAPE.** If your calculator has a tape, fold it, and attach it to the back of the job.
4. **GIVE JOB TO INSTRUCTOR** when completed.

.90 x .98 x .95 = ne requiem.

NCR Electronic Calculator



22 SUBTRACTION AND CORRECTION OF ERRORS

JOB NO. 22 SUBTRACTION AND CORRECTION OF ERRORS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

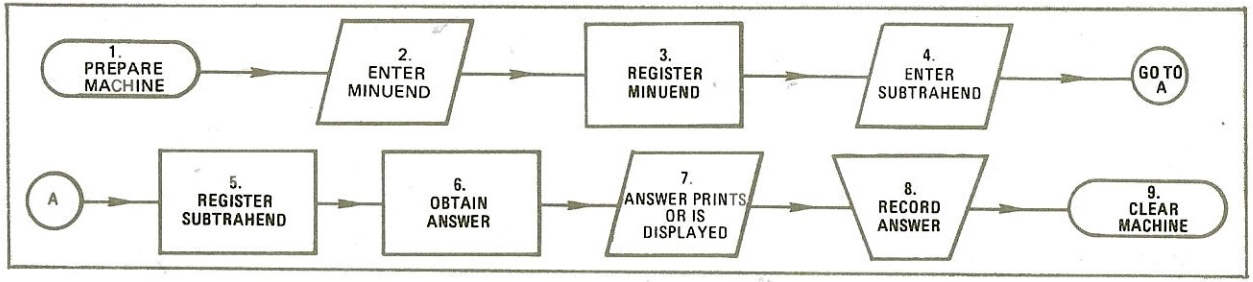
AIMS:

1. To present the use of the minus (—) key to subtract.
2. To present the procedure followed for correcting errors.

PROCEDURE

For Problems 1-16, follow these steps:

1. **PREPARE MACHINE** for addition or subtraction. (See pages 63-64.)
2. **ENTER MINUEND,** the top number, using the touch method. On non-listing machines, the minuend is displayed at this point.
3. **REGISTER MINUEND** by depressing (FIRST NMBR) key, plus (+) bar, or white equals (=) bar as indicated in Job 21. On **Friden Listing**, minuend is printed at this point.
4. **ENTER SUBTRAHEND,** the bottom number, using the touch method. On non-listing machines, subtrahend will be displayed at this point.
5. **REGISTER SUBTRAHEND** by depressing the minus (—) bar located above the plus (+) bar. On the **Monroe,** depress the red equals (=) bar. Subtrahend will print on **Friden Listing** at this point.
6. **OBTAIN ANSWER.**
   a. **Friden Listing** — Depress (PRINT).
   b. **Marchant** — Depress (TOTAL) bar.
   c. **Monroe** — Machine calculation completed. No further machine operation necessary.
7. **ANSWER PRINTS OR IS DISPLAYED.** In Problem 1, the answer is 21.57.
8. **RECORD ANSWER.** Write the answer directly below the problem in the space provided. Do the problem a second time. If the answer is the same as the first, record it in the Answers column. If the second answer differs, do the problem again. Record the correct answer.
9. **CLEAR MACHINE.**



Flowchart for Problems 1-16.

1	2	3	4	5
33.76 —12.19	48.52 —18.31	53.84 — 9.07	84.26 —17.60	37.26 —19.41

6	7	8	9	10
15.90 — 7.05	13.37 — 9.10	51.36 —15.06	91.82 —61.00	75.58 —15.09

11	12	13	14	15	16
825.50 —52.75	432.41 —247.68	207.19 —147.62	641.75 —459.50	521.32 —216.80	689.92 —363.50

ANSWERS

1. 21.57
2. 30.21
3. 44.77
4. 66.66
5. 17.85
6. 8.85
7. 4.27
8. 3630
9. 30.82
10. 60.49
11. 772.75
12. 184.73
13. 59.57
14. 182.25
15. 304.52
16. 326.42

69

JOB NO. 22 / CONTINUED

17	18	19	20	21
3.62	30.50	5.25	35.03	.49
149.17	393.91—	75.51	536.35	83.22
982.58—	840.60	87.56—	.76	23.64
2.93	25.00	1.89	.43	1.85
143.94—	26.90—	7.82—	833.52—	1.05
5.32	16.75	7.25	665.82—	27.34
893.50	7.83—	27.85	.93	33.53
.97	999.27	576.53—	9.11	.74
.86	41.87—	808.16	476.62	3.65
24.70	.75	117.48—	.79	359.44
45.45 Cr	1442.36	136.52	439.42 Cr	534.95
45.45 Cr	1442.36	136.52	439.42 Cr	534.95

ANSWERS

17 45.45 Cr
18 1442.36
19 136.52
20 439.42
21 534.95

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock
minutes

Subtract _____ required

TIMED DRILL

1	2	3	4	5	6
529.27	.04	13.55	9.38	256.79	59.48
2.23—	128.60	408.50—	314.00—	5.42	169.23—
562.47—	114.49—	2.94	7.17	13.00—	17.48
.03	6.31	764.71	8.72—	427.65	789.50
192.48	809.52	2.31—	266.69	79.14—	4.25—
4.33	2.03—	61.70	764.87	5.58	134.87
90.44—	395.12	2.68	6.12—	471.62	75.02
825.33	4.62	829.14	7.08	10.47	4.85—
4.86	769.46	5.63	20.69	3.48	893.50
973.73	2.19	2.46—	.55	90.95	3.78
1,874.89	1,999.34	1,267.08	747.59	1,179.82	1,795.30

70

22 SUBTRACTION AND CORRECTION OF ERRORS

To do Problems 17-21:

1. Subtract items followed by (—).
2. Add all other items.
3. Prove the accuracy of your answer by doing the problem a second time.
4. Answer for Problem 17 is 45.45 Cr.
5. Credit balances are indicated on **Friden** as 45.45=—. Minus (—) sign lights up in dials of **Marchant** and **Monroe.**

CORRECTION OF ERRORS

1. To correct an error that has been added, **subtract** the incorrect number to eliminate it. Then add the correct number.
2. To correct an incorrectly indexed item that has been subtracted, **add** the incorrect item. Then subtract the correct one.

When all problems have been completed:

1. COMPLETE THE TIMED DRILL.

a. In the spaces provided, record the starting and finishing time. Drop fractions of a minute smaller than ½. Fractions larger than ½ minute but less than one full minute are recorded as ½ minute. Subtract to get the time required for completion of the drill.
b. Do each problem only once. Place a check (✓) next to your answer if it is correct; an (X) if incorrect.
c. Count the (X's). Use Grading Scale No. 4 on page 187 to determine your grade.
d. If you have time, do the Timed Drill again. Always record your best grade in the Achievement Chart on page 188.

2. GIVE COMPLETED JOB TO INSTRUCTOR.

23 MULTIPLICATION AND REPEAT ADDITION

JOB NO. 23 MULTIPLICATION AND REPEAT ADDITION

Name Lilian Franklin No. of Errors

Period Date Rating

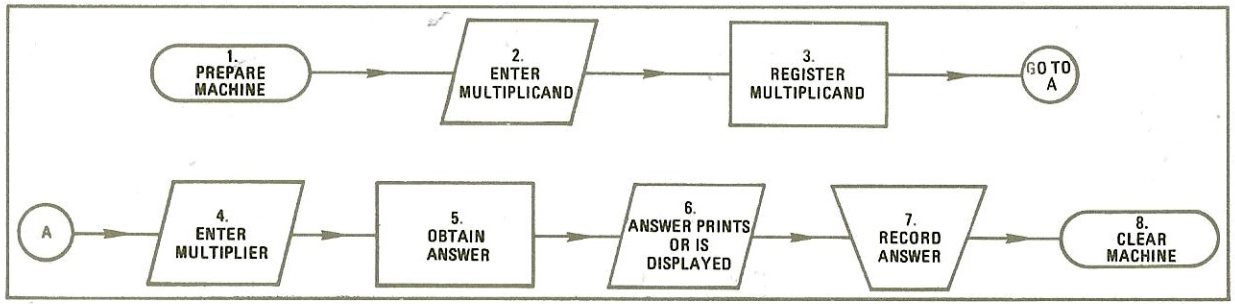
AIMS:

1. To present the use of the multiplication (×) key and the decimal set wheel in multiplication.
2. To present the repeat-addition procedure.

PROCEDURE

To multiply, enter the decimal point as well as the figures, and follow these steps:

1. **PREPARE MACHINE;** clear calculator. If your calculator has a decimal set wheel, turn it to "2." On **Marchant,** simultaneously depress 5 and (CLEAR) bar. On **Monroe,** move round-off switch, located at upper right of machine, to "5/4" position.
2. **ENTER MULTIPLICAND** (245.758 in Problem 1) using the touch method. On non-listing machines, the multiplicand is displayed at this point.
3. **REGISTER MULTIPLICAND.**
   a. **Friden Listing** — Depress (FIRST NMBR) key. Multiplicand prints at this point.
   b. **Marchant** and **Monroe** — Depress (×) key located next to red (—) or under "5/4" switch.
4. **ENTER MULTIPLIER** (28.45 in Problem 1). On non-listing machines, multiplier is displayed.
5. **OBTAIN ANSWER.** Depress the multiplication equals (×=) or (=) keys which are located:
   a. **Friden Listing,** to the left of the "7" key. Multiplier prints at this point.
   b. **Marchant,** to the right of the (+) key.
   c. **Monroe,** under the (×) key.
6. **ANSWER PRINTS OR IS DISPLAYED.** The answer on the **Friden** and **Monroe** is 6,991.82. On the **Marchant,** 6991.81510 is manually rounded off to 6,991.82.
7. **RECORD ANSWER** (6,991.82 in Problem 1).
8. **CLEAR MACHINE.**



Flowchart for Problems 1-10.

1. 245.758 × 28.45 6,991.82
2. 82.412 × 767.923 63,286.07
3. 460.751 × 38.105 17,556.92
4. 76.075 × 140.395 10,680.55
5. 168.762 × 13.875 _____
6. 96.792 × 27.473 _____
7. 179.671 × 248.413 _____
8. 48.479 × 77.318 _____
9. 906.53 × 175.491 _____
10. 18.751 × 88.462 _____

11	12	13	14	15
124.17	193.50	237.25	191.57	166.75
124.17	193.50	237.25	191.57	166.75
124.17	193.50	237.25	191.57	166.75
124.17	148.58	237.25	234.00	200.50
951.87	148.58	161.13	234.00	200.50
951.87	148.58	161.13	234.00	200.50
951.87	148.58	161.13	234.00	213.10
469.50	239.85	208.35	938.50	213.10
469.50	239.85	208.35	938.50	213.10
469.50	239.85	208.35	938.50	213.10

= 71

ANSWERS

1. 6991.82
2. 63,286.07
3. 17,556.92
4. 10,680.55
5. 2,345.7
6. 2,659.17
7. 44,632.61
8. 2,748.30
9. 159,087.86
10. 1,658.25
11. 4,760.79
12. 1,894.37
13. 2,057.44
14. 4,376.21
15. 1,954.15

JOB NO. 23 / CONTINUED

16	17	18
743.23	159.22	256.86
743.23	159.22	256.86
743.23	159.22	256.86
743.23	92.74	256.86
59.65	92.74	78.34
59.65	92.74	78.34
59.65	131.95	78.34
827.03	131.95	762.90
827.03	131.95	762.90
824.03	131.95	762.90

ANSWERS

16 _____

17 _____

18 _____

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

minutes

Subtract _____ required

TIMED DRILL

1	2	3
671.59	577.23	489.96
671.59	577.23	489.96
671.59	577.23	489.96
64.21	598.08	43.80
64.21	598.08	43.80
64.21	598.08	43.80
64.21	842.95	43.80
225.73	842.95	249.65
225.73	842.95	249.65
225.73	842.95	249.65
2,948.80	6,897.73	2,394.03

4 208.651 × 175.25 36,566.09

5 86.125 × 62.755 5,404.77

6 71.238 × 289.50 20,623.40

7 574.875 × 38.255 21,991.84

8 83.875 × 135.855 11,394.84

9 352.25 × 16.175 5,697.64

10 64.852 × 127.85 8,291.33

11 158.125 × 88.375 13,974.30

12 627.793 × 185.75 116,612.55

13 55.75 × 15.125 843.22

14	15	16
785.95	461.05	938.78
− 61.75	−125.50	−275.50
724.20	335.55	663.28

23 MULTIPLICATION AND REPEAT ADDITION

Verify each factor as it appears on the screen or tape, and follow the preceding procedure for the remaining multiplication problems.

REPEAT ADDITION

1. **PREPARE MACHINE;** clear calculator.
2. **REPEAT-ADD 124.17** in Problem 11 by following these steps:
   a. **Friden Listing Calculator**
      (1) Enter the first item, 124.17, and depress (FIRST NMBR) key.
      (2) Enter 4, the number of times the first item is to be added, and depress the (×=) key.
      (3) Enter the second item, 951.87, and depress the (FIRST NMBR) key.
      (4) Enter 3, the number of times the second item is to be added, and depress the (×+) which is located to the left of the (×=) key.
      (5) Repeat Steps 3 and 4 for any additional item to be repeat-added.
      (6) Depress (PRINT) to get the answer, 4,760.79 =. Record it in the spaces provided.
   b. **Marchant and Monroe Calculators**
      (1) Enter 124.17, and depress the plus (+) or the memory plus (white M) key as many times as the number is listed in the problem.
      (2) Depress the (CLEAR) bar or (CI) key.
      (3) Repeat Steps 1 and 2 above for the remaining items.
      (4) On **Monroe,** depress the recall memory (RM) key to get the answer, 4,760.79.
      (5) On **Monroe,** depress the clear memory (CM). Verify answer as usual, and record it in the spaces provided.

   When all problems have been completed:

1. **COMPLETE THE TIMED DRILL** following the procedure used in Job No. 22. Use Grading Scale No. 4 on page 187 to determine your grade.
   a. If time permits, do the Timed Drill again. Record your best grade in the Achievement Chart on page 188.
2. **GIVE JOB TO INSTRUCTOR** when completed.

24

DIVISION

JOB NO. 24
DIVISION

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To present the use of the division key and the decimal set wheel to divide.

PROCEDURE

To divide, enter the decimal point as well as the figures and follow these steps:

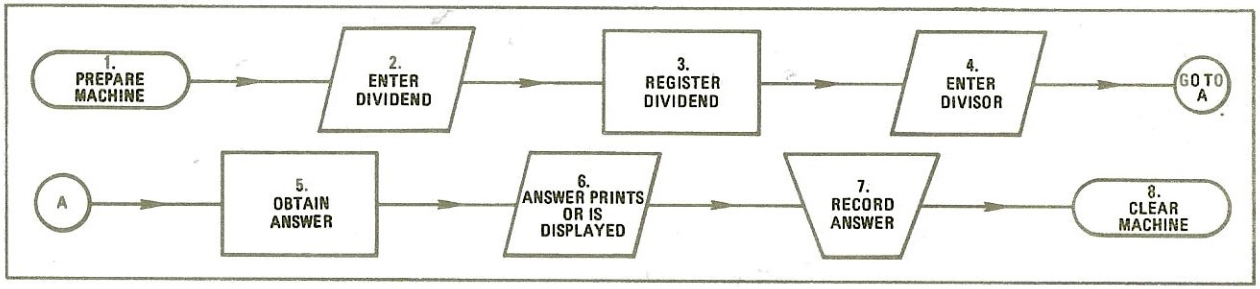
1. PREPARE MACHINE. Clear calculator.
- a. **Friden Listing** — Turn decimal set wheel to "3."
- b. **Marchant** — Depress 3 and (CLEAR) bar simultaneously.
- c. **Monroe** — Turn decimal wheel to "2," and round-off switch to "5/4" position.

2. ENTER DIVIDEND (478.956 in Problem 1). On non-listing machines, dividend is displayed.

3. REGISTER DIVIDEND.
- a. **Friden Listing** — Depress (FIRST NMBR) key. Dividend is printed.
- b. **Marchant** — Depress (÷) key, located at the right of (TOTAL) bar.
- c. **Monroe** — Depress enter dividend (÷) key. It is located to the right of the (×) key.

4. ENTER DIVISOR (26.875 in Problem 1). On non-listing machines, the divisor is displayed.

5. OBTAIN ANSWER.
- a. **Friden Listing** — Depress the division equals (÷=) key located at the left of the (PRINT) bar. Divisor is printed at this point.
- b. **Marchant** — Depress (=) bar.
- c. **Monroe** — Depress the white equals (=) bar.



Flowchart for Problems 1-15 and Timed Drill.

Use the touch method to index the dividend and the divisor. Be sure to depress the decimal point as well as the figures in the problem.

					ANSWERS
1	478.956	÷	26.875	17.82	17.82
2	295.853	÷	54.465	5.43	5.43
3	716.375	÷	9.712	73.76	73.76
4	542.667	÷	130.8	4.15	4.15
5	89.75	÷	1.755	51.14	51.14
6	543.	÷	75.50	7.19	7.19
7	946.125	÷	87.	10.88	10.88
8	845.	÷	59.	14.32	14.32
9	542.468	÷	65.912		8.23
10	1567.50	÷	150.3	10.43	10.43
11	1156.111	÷	18.75	61.66	61.66
12	821.555	÷	54.333	15.12	15.12
13	2658.6666	÷	357.50	7.44	7.44
14	5122.755	÷	25.255	202.84	202.84
15	678.951	÷	8.257	82.23	82.23

73

JOB NO. 24 / CONTINUED

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

Divide Amount of Sales by Number of Customers.
Round out answers to the nearest cent.

DEPARTMENT STORE SALES ANALYSIS

Dept. No.	Amount of Sales	Number of Customers	Average Per Customer
125	15,236.75	185	82.36
126	17,395.25	205	84.86 - 84.85
127	9,365.37	96	97.56
128	12,077.92	162	74.56
129	8,133.80	87	93.49
130	75,135.36	211	356.09
131	62,833.40	407	154.38
132	13,404.28	116	115.55
133	88,456.92	945	93.61
134	92,137.55	936	98.44
135	44,398.02	645	68.83
136	14,713.75	306	48.08

6. ANSWER PRINTS OR IS DISPLAYED. Round off the answer to two decimal places manually, if necessary.

7. RECORD ANSWER. (Answer in Problem 1 is 17.82.)

8. CLEAR MACHINE. Verify the dividend and divisor as they are entered to insure a high degree of accuracy.

When all problems have been completed:

1. COMPLETE THE TIMED DRILL as usual. Determine your grade by using Grading Scale No. 1 on page 187.
   a. If time permits, do the Timed Drill again. Record your best grade in the Achievement Chart on page 188.

2. GIVE JOB TO INSTRUCTOR when completed.

ON THE JOB

Machine manuals are informative.

Read your machine manual carefully.

25 FRACTIONS

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

JOB NO. 25 FRACTIONS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIM:

To present the procedures used in adding, subtracting, multiplying, and dividing numbers containing fractions.

PROCEDURE

1. **PREPARE MACHINE** and clear it. If your calculator has a decimal set wheel, turn it to:
   a. **Friden Listing**, "2" for multiplication; "4" for other problems. Round off to two decimals manually.
   b. **Marchant**, depress 4 and (CLEAR) bar simultaneously.
   c. **Monroe**, "2" and the round-off switch at the "5/4" position.
2. **ENTER WHOLE NUMBERS** as usual.
3. **CONVERT FRACTIONS** to their decimal equivalents as per the following conversion table:

Decimal Equivalents

1/2	.5	3/8	.375	3/16	.1875
1/3	.3333	5/8	.625	5/16	.3125
2/3	.6667	7/8	.875	7/16	.4375
1/4	.25	1/12	.0833	9/16	.5625
3/4	.75	5/12	.4167	11/16	.6875
1/6	.1667	7/12	.5833	13/16	.8125
5/6	.8333	11/12	.9167	15/16	.9375
1/8	.125	1/16	.0625		

4. **ENTER DECIMAL POINT** as well as the figures in the decimal equivalents.
5. **ADD, SUBTRACT, MULTIPLY, OR DIVIDE** as usual after converting the fractions to their decimal equivalents.
6. **ROUND OFF ALL ANSWERS** to two decimals. The answer for Problem 1 is 2,834.13.

Add:

1	2	3	4
749 1/2	765 3/8	184 1/16	604 5/16
856 1/4	894 1/4	515 3/16	519 1/8
110 3/4	683 5/8	728 1/4	857 3/8
681 1/8	576 1/2	296 1/8	933 3/16
436 1/2	134 3/8	601 1/16	252 5/16
2834.13			
2834.13	3054.13	3322.69	3166.31

Subtract:

5	6	7	8
681 1/2	578 7/16	796 2/3	939 7/12
−134 1/4	−204 1/12	−463 1/6	−544 11/12
547.25	374.35	333.30	394.67

Multiply:

9. 298 1/8 × 378 = 112691.25
10. 427 1/4 × 147 = 62805.75
11. 934 3/4 × 933 = 872121.75
12. 384 3/8 × 378 = 145293.75

Divide:

13. 926 1/4 ÷ 188 = 4.93
14. 842 1/3 ÷ 93 = 9.06
15. 934 1/6 ÷ 84 = 11.12
16. 734 7/8 ÷ 47 = 15.64

ANSWERS

1. 2834.13
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13. 4.93
14. 9.06
15. 11.12
16. 15.64

75

JOB NO. 25 / CONTINUED

Multiply:

17 9,142 11/12 × 64 1/2 _____

18 6,455 3/8 × 148 3/4 _____

Divide:

19 3,768 3/4 ÷ 211 5/8 _____

20 8,733 1/6 ÷ 38 2/3 _____

21 4,361 1/2 ÷ 108 5/6 _____

ANSWERS

17 589,718.13

18 960,237.03

19 17.81

20 225.86

21 40.08

TIMED DRILL

Instructions:

1. Look up the decimal equivalents before starting the Timed Drill. If necessary, write them above the fractions.
2. Round off answers to two decimals.

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

Add:

1	2
184 1/4	965 1/8
728 1/2	146 3/8
296 3/4	352 5/8
348 7/8	173 1/2
873 1/6	841 5/6
2431.54	2,479.46

Subtract:

3	4
917 11/16	981 ~~7/12~~
−178 1/2	−406 ~~1/4~~
739.19	575.33

~~3~~ = -7.6,

~~7.6~~

Multiply:

5 1,483 1/4 × 147 1/8 218,223.16

6 3,704 1/3 × 89 2/3 332,155.34

7 5,427 1/6 × 271 1/6 1,471,666.88

Divide:

8 5,917 5/6 ÷ 155 1/4 38.12

9 3,348 1/2 ÷ 98 7/8 33.87

10 2,108 7/12 ÷ 103 1/6 20.44

25 FRACTIONS

When all problems have been completed:

1. **COMPLETE THE TIMED DRILL** as usual. Use Grading Scale No. 4 on page 187 to determine your grade.
   a. If time permits, do the Timed Drill again. Try to improve your speed.
   b. Record your best grade on the Achievement Chart on page 188.
2. **GIVE JOB TO INSTRUCTOR** when completed.

NOTE: Before proceeding to Job No. 26, ask your instructor about Test No. 5. He may want you to complete it before you start Job No. 26.

26 PERCENTAGE

JOB NO. 26
PERCENTAGE

Name _____ No. of Errors _____
Period _____ Date _____ Rating _____

AIM:

To present procedures followed to compute a given percent of a number, and the percent of increase.

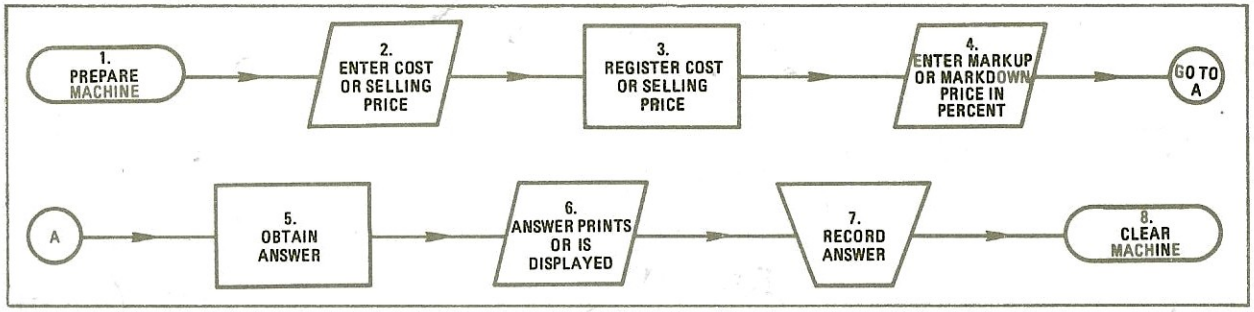
PROCEDURE

Before the markup or markdown price can be calculated on the machine, the price in percent must be determined. To find **markup** price in percent, **add** percent of markup (25% in Problem 1) to cost percent (100%). In Problem 1, the markup price in percent is 125% (25% + 100% = 125%) or 1.25 when converted to decimals.

To find **markdown** price in percent, **subtract** percent of markdown (15% in Problem 4) from selling price percent (100%). In Problem 4, the markdown price in percent is 85% (100% — 15% = 85%) or .85 when converted to decimals.

The following is the multiplication process used for solving Problems 1-6:

1. **PREPARE MACHINE.** Clear calculator. If your calculator has a decimal set wheel, turn it to "2" at "5/4." On **Marchant**, depress 5 and (CLEAR) bar simultaneously.
2. **ENTER COST OR SELLING PRICE.** In Problem 1, the cost is $45.75. In Problem 4, the selling price is $65.98. On non-listing machines, these factors are displayed.
3. **REGISTER COST OR SELLING PRICE.**
   a. **Friden Listing** — Depress (FIRST NMBR) key. Factor is printed at this point.
   b. **Marchant** and **Monroe** — Depress (×) key.
4. **ENTER MARKUP OR MARKDOWN PRICE IN PERCENT** (1.25 in Problem 1; .85 in Problem 4). On non-listing machines, factor is displayed at this point.


1. PREPARE MACHINE
2. ENTER COST OR SELLING PRICE
3. REGISTER COST OR SELLING PRICE
4. ENTER MARKUP OR MARKDOWN PRICE IN PERCENT
GO TO A
A
5. OBTAIN ANSWER
6. ANSWER PRINTS OR IS DISPLAYED
7. RECORD ANSWER
8. CLEAR MACHINE

Flowchart for Problems 1-6.

Find the Markup Price of:

	Cost of Article	Percent of Markup	Markup Price
1	$ 45.75	25%	57.19
2	125.85	12 1/2%	141.58
3	95.35	30%	123.96

Find the Markdown Price of:

	Selling Price	Percent of Markdown	Markdown Price
4	65.98	15%	56.08
5	225.99	25%	169.49
6	125.50	20%	100.40

Find the commission earned on:

	Amount of Sales	Percent of Commission	Commission
7	1,244.75	4 1/4%	52.90
8	2,376.50	3 1/2%	83.18
9	5,271.15	2 1/4%	118.60
10	6,573.63	5 1/2%	361.55

ANSWERS

1. 57.19
2. 141.58
3. 123.96
4. 56.08
5. 169.49
6. 100.40
7. 52.90
8. 83.18
9. 118.60
10. 361.55

(77)

JOB NO. 26 / CONTINUED

11

14,897
231,084

DAWSON STORES, INC.

WEEKLY STORES REPORT — EASTERN DISTRICT

3113
231,084

For Week Ended September 17, 19__

Stores In	Total Sales	Total Salaries	Percent of Sales	Rent	Percent of Sales
Atlantic City	231,084	14,897	6.45%	3,113	1.35%
Camden	173,642	15,253	8.78	1,624	.94
Elizabeth	185,621	16,391	8.83	1,762	.95
Lambertville	210,493	13,495	6.41	1,948	.93
Morristown	153,491	7,927	5.16	1,275	.83
New Brunswick	352,148	21,143	6.00	7,166	2.03
Passaic	361,192	22,247	6.16	6,948	1.92
Pittsburgh	153,481	7,927	5.16	1,275	.83
Rochester	145,336	11,232	7.73	1,260	.87
Salem	333,541	21,265	6.38	3,533	1.06
Scranton	256,193	20,559	8.02	2,480	.97
Woodbridge	75,698	11,431	15.10	562	.74
Totals	263,920	183,767	6.97	32,946	1.25

E= 7 8

26 PERCENTAGE

5. **OBTAIN ANSWER.** Depress the multiplication equals (×=), (=), or white equals (=) keys.
6. **ANSWER PRINTS OR IS DISPLAYED.**
7. **RECORD ANSWER.** If your calculator does not have a decimal set wheel, round off the answer to two decimals. In Problem 1, the answer is $57.19; in Problem 4, $56.08.
8. **CLEAR MACHINE.**

To compute the commission earned in Problem 7, follow these steps:

1. **PREPARE MACHINE;** clear calculator.
2. **CONVERT COMMISSION PERCENT** to decimals. Change fractions to their decimal equivalents, and move the decimal point two places to the left, .0425.
3. **MULTIPLY THE SALES,** 1,244.75, by .0425 to get the commission earned, 52.90.
4. **ROUND OFF ANSWER,** 52.90188, to two decimals, and record it as 52.90.
5. **DO REMAINING PROBLEMS** in the same way.

To do Problem 11, follow these steps:

1. **PREPARE MACHINE.**
   a. **Friden** — Set decimal set wheel at "5."
   b. **Monroe** — Set decimal set wheel at "4" at "5/4."
   c. If your calculator does not have a round-off switch, round off the answers to four decimals manually.
2. **SOLVE PROBLEM.**
   a. **Friden Listing Calculator**
      (1) Enter the total salaries, 14,897, and depress (FIRST NMBR) key.
      (2) Enter the total sales, 231,084, and depress (TO MEMORY) key.
      (3) Depress (FROM MEMORY) key, and then the (÷=) key.

JOB NO. 26 / CONTINUED Name _____ Period _____

(4) Record the answer, .06446, as 6.45% in the first Percent of Sales column.
(5) Enter the rent, 3,113, and depress (FROM MEMORY) key.
(6) Depress (÷=) key. Record the answer, .01347, as 1.35% in the last column.

b. **Marchant Non-Listing Calculator**

(1) Enter the total salaries, 14,897, and depress the (÷) key.
(2) Enter the total sales, 231,084, and depress the (=) bar.
(3) Record the answer, .06447, as 6.45% in the first Percent of Sales column.
(4) Enter rent, 3,113, and depress (=) bar.
(5) Record the answer, .01347, as 1.35% in the last column.

c. **Monroe Non-Listing Calculator**

(1) Depress the constant (K) key which is to the right of the (×) key.
(2) Enter total salaries, 14,897, and depress the divide (÷) key.
(3) Enter total sales, 231,084, and depress the white equals (=) key.
(4) Record the answer, .0645, as 6.45% in the first Percent of Sales column.
(5) Enter the Rent, 3,113, and depress the white equals (=) key.
(6) Record the answer, .0135, as 1.35% in the last column.
(7) Depress the constant (K) key. This will release the (K) key.

Find the percent of Increase in sales.

WEEKLY SALES ANALYSIS

	Dept.	Sales This Year	Sales Last Year	Amount of Increase	Percent of Increase
12	A	10,054	8,996	1,058	11.76%
13	B	21,946	18,493	3,453	18.67
14	C	19,123	16,727	2,396	14.32
15	D	7,865	7,180	685	9.54
16	E	29,481	22,674	6,807	
17	F	10,947	9,692	1,255	
18	G	12,965	10,178	2,787	
19	H	18,940	16,470	2,470	
20	I	11,715	8,863	2,852	
21	J	19,369	15,466	3,903	
22	K	12,695	10,054	2,641	
23	L	21,946	18,460	3,486	
24	Total				

ANSWERS

12 11.76%
13 18.67
14 14.32
15 9.54
16 30.02
17 12.95
18 27.35
19 15.30
20 32.15
21 25.24
22 26.27
23 18.88
24 20.70

JOB NO. 26 / CONTINUED

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

TIMED DRILL

Find the Markup Price for:

				Markup Price
1	Cost of Article	$ 75.60	20% Markup	1 90.72
2	Cost of Article	89.98	25% Markup	2 112.48
3	Cost of Article	125.50	15% Markup	3 144.33

Find the Markdown Price for:

				Markdown Price
4	Selling Price	$135.75	15% Markdown	4 115.39
5	Selling Price	95.98	20% Markdown	5 76.78
6	Selling Price	150.00	25% Markdown	6 112.50

Find the Commission Earned on:

				Commission Earned
7	Sales of	$7,125.10	4 1/4% Commission	7 302.82
8	Sales of	9,247.20	3 1/2% Commission	8 323.65
9	Sales of	6,143.95	5 1/2% Commission	9 337.92

Find the Percent of Increase in Sales:

				Percent of Increase
10	Current Sales $13,985	Previous Sales $11,145		10 25.48 %
11	Current Sales 11,275	Previous Sales 9,789		11 15.18 %

80

26 PERCENTAGE

3. COMPUTE THE PERCENTAGES for the remaining stores in the same way. Add the three money columns before computing the percents for the last line.

To compute the percent of increase for Problem 12, follow these steps.

1. PREPARE MACHINE.

a. **Friden** — Set decimal set wheel at "5."

b. **Marchant** — Depress 5 and (CLEAR) bar simultaneously.

c. **Monroe** — Set decimal set wheel at "4" and round-off switch at "5/4."

d. If your calculator does not have a round-off switch, round off the answers to four decimals manually.

2. DIVIDE AMOUNT OF INCREASE, 1,058, by last year's sales, 8,996.

3. RECORD ANSWER, .11761, as 11.76% in the spaces provided.

4. VERIFY YOUR ACCURACY, if you have time, by dividing this year's sales, 10,054, by last year's sales, 8,996.

5. OBTAIN PERCENT OF INCREASE. The answer, 1.11761, less 1.00000 is the percent of increase — .11761 or 11.76%.

6. COMPLETE REMAINING PROBLEMS following the same steps. Add the three money columns before computing the percent of increase for the last line.

The procedure followed above to verify the answers is used effectively to compute the percent of increase when the amount of the increase is not required.

When all problems have been completed:

1. COMPLETE THE TIMED DRILL as usual, and use Grading Scale No. 3 on page 187 to determine your grade.

a. If you have time, do the Timed Drill again. Record your best grade in the Achievement Chart on page 188.

2. GIVE JOB TO INSTRUCTOR when completed.

27 MULTIPLICATION WITH CONSTANTS AND ACCUMULATIVE MULTIPLICATION

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

JOB NO. 27 MULTIPLICATION: CONSTANTS AND ACCUMULATIVE

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

AIMS:

1. To show how to save machine operations by keeping a constant multiplier in the calculator until an entire series of multiplications is completed.
2. To present the procedure followed to compute individual extensions and to accumulate them.

PROCEDURE

1. PREPARE MACHINE. Clear calculator. Turn decimal set wheel to "2." On **Marchant**, depress 2 and (CLEAR) simultaneously. On **Monroe**, move round-off switch to "5/4."

2. ENTER CONSTANT (5.84 in Problem 1). On **Monroe** — Depress (K) key before entering constant.

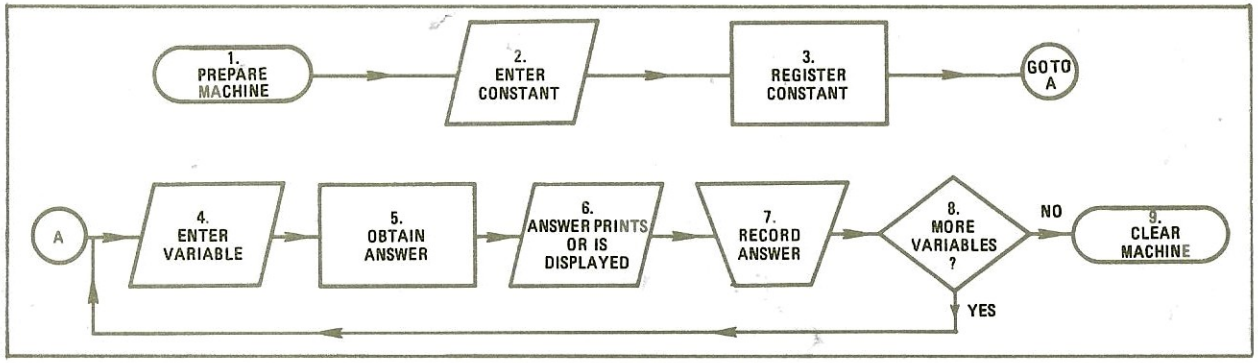
3. REGISTER CONSTANT.
- a. **Friden Listing** — Depress the (TO MEMORY) key.
- b. **Marchant** and **Monroe** — Depress (X) key.

4. ENTER VARIABLE (37 in Problem 1).

5. OBTAIN ANSWER.
- a. **Friden Listing** — Depress (FROM MEMORY) key and (×=) key.
- b. **Marchant** — Depress (=) key.
- c. **Monroe** — Depress white equals (=) key.

6. ANSWER PRINTS OR IS DISPLAYED. Round off the answer to two decimal places manually, if necessary.

7. RECORD ANSWER. For Problem 1, the answer is 216.08.



Flowchart for Problems 1-35.

SERIES ONE

	Hours	Rate	Amount
1	37	@5.84	216.08
2	39	@5.84	227.76
3	40	@5.84	233.60
4	36	@5.84	210.24
5	40	@5.84	233.60

SERIES TWO

	Hours	Rate	Amount
6	42	@ 4.52	189.84
7	37	@ 4.52	167.24
8	28	@ 4.52	126.56
9	39	@ 4.52	176.28
10	45	@ 4.52	203.40

SERIES THREE

	Bd. Ft.	Rate	Amount
11	749	@ .65	486.85
12	605	@ .65	393.25
13	794	@ .65	516.10
14	358	@ .65	232.70
15	941	@ .65	611.65

SERIES FOUR

	Units	Rate	Amount
16	613	@6.72	4,119.36
17	205	@6.72	1,377.60
18	422	@6.72	2,835.84
19	678	@6.72	4,556.16
20	904	@6.72	6,074.88

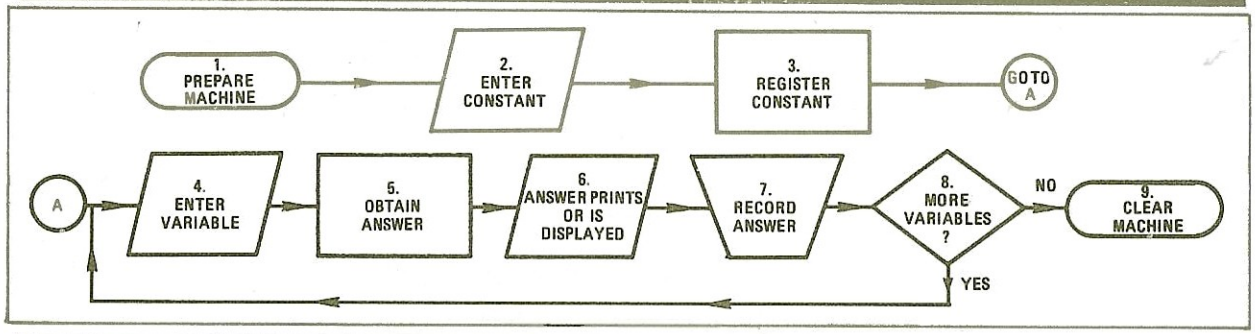
81

ANSWERS

1	216.08	7	167.24	14	732.78
2	227.76	8	126.56	15	611.65
3	233.60	9	176.28	16	4,119.36
4	210.24	10	203.40	17	1,377.60
5	133.60	11	486.85	18	2,835.84
6	189.84	12	393.25	19	4,556.16
		13	516.10	20	6,074.88

JOB NO. 27 / CONTINUED

Wed 27th



WHEEL-RITE COMPANY
Weekly Payroll
September 25, 19__

	Employee	No.	Hours	Rate	Amount
21	Moe Aronsberg	125	39	5.25	204.75
22	John Barreca	413	40	5.25	210.00
23	Edward Callahan	127	45	5.25	236.25
24	Stanley Duxzak	302	51	5.25	267.75
25	William Fromer	129	37	5.25	194.25
26	Paul Hoff	431	40	6.50	260.00
27	Joseph Kaczka	033	42	6.50	273.00
28	Nick Lanzetti	903	51	6.50	331.50
29	Ron McAuley	133	39	6.50	253.50
30	Paul Nazzari	561	38	6.50	
31	Kevin O'Melia	841	40	4.95	
32	Don Richards	136	43	4.95	
33	Morris Swissman	238	52	4.95	
34	Ed. Underhill	489	36	4.95	
35	Walter Van Note	562	38	4.95	

ANSWERS

21 204.75
22 210.00
23 236.25
24
25
26
27
28
29
30
31
32
33
34
35

27 MULTIPLICATION WITH CONSTANTS AND ACCUMULATIVE MULTIPLICATION

8. MORE VARIABLES? If there are more, go back to Step 4. If not, proceed to Step 9.

9. CLEAR MACHINE. On **Monroe**, depress (K) key to release the constant.

To do Problems 21-35, follow the above procedure, clearing the machine after Problems 25, 30, and 35.

ACCUMULATIVE MULTIPLICATION

1. PREPARE MACHINE. Clear calculator.

2. MULTIPLY PROBLEMS 36-38 by following these steps for solving Problem 36:

a. **Friden Listing Calculator**

(1) Turn the decimal set wheel to "2."
(2) Enter 147.345, and depress (FIRST NMBR) key.
(3) Enter 35.105, and depress (×=) key.
(4) Record 5,172.55 in the amount column.
(5) Enter the second item, 87.025, and depress the (FIRST NMBR) key.
(6) Enter the second multiplier, 68.67, and depress the accumulative multiplication (×+) key.
(7) Record 5,976.01 in the amount column.
(8) Repeat Steps 5, 6, and 7 for the remaining items in Problem 36.
(9) To get the total, depress the (PRINT) key. Record the answer, 102,613.03, in the spaces provided.

b. **Marchant Non-Listing Calculator**

(1) Depress 6 and (CLEAR) simultaneously.
(2) Enter 147.345, and depress the (×) key.
(3) Enter 35.105, and depress blue (∓).
(4) Record the answer, 5,172.546225, as 5,172.55 in the amount column.
(5) Repeat Steps 2, 3, and 4 for the remaining items in Problem 36.

27 MULTIPLICATION WITH CONSTANTS AND ACCUMULATIVE MULTIPLICATION

(6) When all items have been extended, depress (TOTAL) bar to get 102,613.03, and record it in the spaces provided.

c. **Monroe Non-Listing Calculator**

(1) Depress clear memory (CM) key.
(2) Set decimal selector wheel at "2," and the round-off switch at "5/4."
(3) Enter 147.345, and depress (×) key.
(4) Enter 35.105 and depress the memory plus (white M) key.
(5) Repeat Steps 3 and 4 for the remaining items in Problem 36.
(6) Depress recall memory (RM) key to get the total 102,613.03. Record it in the spaces provided.

3. COMPLETE PROBLEMS 37-38 in the same manner.

VERIFYING INVOICES

1. USE ACCUMULATIVE MULTIPLICATION to check the accuracy of the invoice items in Problem 39. Check each extension separately.

2. CROSS OUT ANY INCORRECT FIGURES, and neatly write the correct ones above the written amounts. Check the grand total also; and, where necessary, make the needed corrections.

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

JOB NO. 27 / CONTINUED Name Lillian Franklin Period _____

Compute extensions and accumulate them.

36

147.345 × 35.105	5,172.55	
87.025 × 68.67	5976.08	
892.1752 × 49.555	44211.74	
69.5631 × 86.125	5991.12	
543.8103 × 75.875	41,261.61	
Total	61392.673 / 102,613.03	

37

20.733 × 2.763		
37.35 × 7.148		
63.825 × 4.673		
8.257 × 9.50		
52.875 × 5.685		
Total	1,001.55	

ANSWERS

36 _____
37 _____
38 _____
39 _____

38

69 1/2 yds.	Striped Denim	1.25 per yd.	86.88
45 1/4 yds.	Dress Linen	3.98 per yd.	180.95
27 3/4 yds.	White Pique	2.13 per yd.	59.11
35 1/2 yds.	Flowered Percale	1.49 per yd.	52.90
51 1/4 yds.	Terrycloth	2.54 per yd.	130.18
Total			509.17

39

17	#125	Nylon Curtains 54 × 54	6.98 per pr.	118.66 / 241.56
22	#3246	Chenille Spreads twin size	10.98 each	242.56
24	#1486	Percale Fitted Sheets twin	4.95 each	118.80
35	#3800	Percale Fitted Sheets full	9.25 each	323.75
42	#3811	Scalloped Sheets twin size	7.75 each	325.50
Total				1,128.27 / 1,129.27

83

JOB NO. 27 / CONTINUED

TIMED DRILL

Round off all answers to two decimals. If you have time do the Timed Drill again.

Finished at _____ o'clock

Started at _____ o'clock

Subtract _____ minutes required

Accumulate:

1

145.1467 × 125.691
61.145 × 85.035
129.375 × 226.275
85.125 × 97.725
114.875 × 168.625

Total 80,407.07

2

284.125 × 175.286
185.855 × 832.75
336.275 × 541.25
83.25 × 476.125
126.755 × 902.875

Total 540,664.06 or 540,664.05

3

482.875 × 387.25
96.125 × 84.227
731.75 × 148.995
82.556 × 37.875
133.552 × 675.333

Total 397,435.63

Compute extensions and accumulate them:

4

75 yds.	Gingham	3.50 per yd.	262.50
87 yds.	Wool Crepe	7.95 per yd.	691.65
34 yds.	Taffeta	3.25 per yd.	110.50
31 yds.	Shantung	3.49 per yd.	108.19
45 yds.	Linen	3.98 per yd.	179.10
81 yds.	Bates Cotton	2.49 per yd.	201.69
53 yds.	Velvet	7.92 per yd.	419.76
45 yds.	Muslin	.79 per yd.	35.55
	Total		2,008.94

84

MULTIPLICATION WITH CONSTANTS AND ACCUMULATIVE MULTIPLICATION

When all problems have been worked:

1. **COMPLETE THE TIMED DRILL,** as usual, and use Grading Scale No. 4 on page 187 to determine your grade.
   a. If you have time, do the Timed Drill again.
   b. Record your best grade in the Achievement Chart on page 188.
2. **GIVE JOB TO INSTRUCTOR** when completed.

ON THE JOB

In business, time is money.

Do the job right — the first time.

28 DISCOUNTS

JOB NO. 28
DISCOUNTS

Name _____ No. of Errors _____

Period _____ Date _____ Rating _____

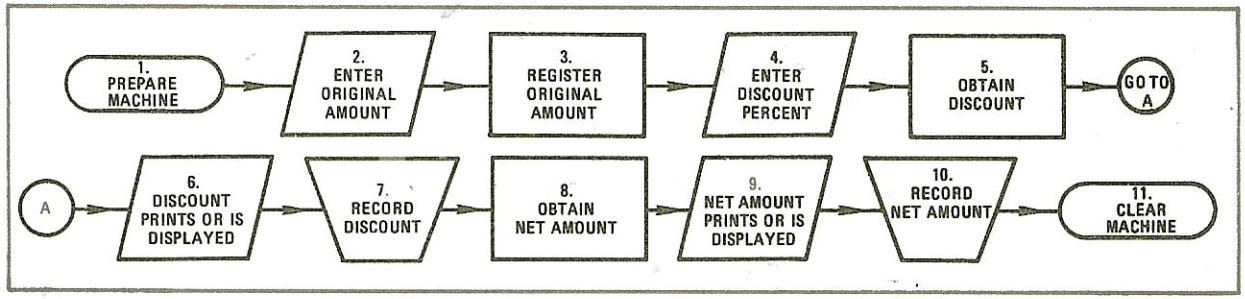
AIM:

To develop the procedure followed to compute discounts and to determine the net amount of a bill.

PROCEDURE

Follow these steps to find the discount and net amount for Problem 1:

1. **PREPARE MACHINE.** Clear calculator. Set the decimal set wheel at "2" and "5/4." On **Marchant,** depress "2" and (CLEAR) simultaneously.
2. **ENTER ORIGINAL AMOUNT.** In Problem 1, the original amount is 495.02. On **Monroe,** depress accumulate memory (AM) key located at upper left of keyboard before entering amount. On non-listing machines, the amount is displayed at this point.
3. **REGISTER ORIGINAL AMOUNT.**
   a. **Friden Listing** — Depress (DUP) key. Amount is printed at this point.
   b. **Marchant** — Depress (+) and (×) keys.
   c. **Monroe** — Depress white (=) and (×) keys.
4. **ENTER DISCOUNT PERCENT.** In Problem 1, the discount percent is .15. On non-listing machines, discount is displayed.
5. **OBTAIN DISCOUNT.**
   a. **Friden Listing** — Depress (×—) key.
   b. **Marchant** — Depress (=) key.
   c. **Monroe** — Depress red (=) key.
6. **DISCOUNT PRINTS OR IS DISPLAYED.**
7. **RECORD DISCOUNT.** In Problem 1, the amount of discount is 74.25.
8. **OBTAIN NET AMOUNT.**
   a. **Friden Listing** — Depress (PRINT) bar.
   b. **Marchant** — Depress (—) and (TOTAL) bars.
   c. **Monroe** — Depress recall memory (RM) key located below (AM) key.
9. **NET AMOUNT PRINTS OR IS DISPLAYED.**



Flowchart for Problems 1-7.

Find the **discount** and the **net amount.**

		Discount	Net Amount
1	495.02 less 15%	74.25	
2	1,703.50 less 20%	340.70	
3	2,135.25 less 10%	213.53	
4	6,056.75 less 25%	1514.88	
5	945.50 less 15%	475.450	
6	3,178.88 less 20%		
7	849.83 less 12%		

Find the **net amount only.**

8	567.49 less 10%-5%-2%	475.50
9	1,234.50 less 10%-10%-5%	949.95
10	2,945.75 less 5%-10%-10%	2266.75
11	4,187.05 less 15%-10%-5%	3042.94
12	988.55 less 25%-10%-10%	606.54
13	7,002.45 less 20%-5%-5%	5055.77
14	5,238.75 less 5%-5%-2%	4,633.41
15	895.25 less 25%-10%-10%	543.86

.90 × .95 × .98

85

ANSWERS

Net Amounts

1	420.77
2	1,362.80
3	1,921.72
4	4,542.56
5	803.67
6	2,543.16
7	747.85
8	475.50
9	949.95
10	2266.75
11	3042.94
12	600.54
13	5,055.77
14	4,633.41
15	543.86

JOB NO. 28 / CONTINUED

TIMED DRILL

Add:

①	②
38.07	89.04
94.42	20.28
19.35	48.22
64.20	45.53
73.80	87.70
35.45	95.36
43.84	14.50
369.13	400.63

Subtract:

③	④
174.99	403.20
−35.05	−97.50
139.94	305.70

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock
_____ minutes

Subtract _____ required

Multiply:

⑤ 394.02 × 3.755 1,479.55

⑥ 786.25 × 3.339 2,625.29

Find the **discount** and the **net amount:**

⑦ 133.72 less 15% Discount 20.06 Net Amount 113.66

⑧ 405.96 less 12% Discount 48.72 Net Amount 357.24

⑨ 941.23 less 18% Discount 169.42 Net Amount 771.81

Find the **net amount** only:

⑩ 339.16 less 15% - 10% - 5% Net Amount 246.49

⑪ 575.00 less 20% - 10% - 5% Net Amount 372.60

8 6

28 DISCOUNTS

10. RECORD NET AMOUNT. In Problem 1, the net amount is 420.77.

11. CLEAR MACHINE. On **Monroe**, depress clear memory (CM) key.

Follow the above procedures for Problems 2-7.

Follow these steps to find the net amount for Problems 8-15.

1. PREPARE MACHINE. Clear calculator.

2. FIND NET AMOUNT for Problem 8:

a. Friden Listing Calculator

(1) Enter 567.49, and depress (FIRST NMBR).
(2) Enter .90 (100% — 10%), and depress (×=)
(3) Enter .95 (100% — 5%), and depress (×=).
(4) Enter. 98 (100% — 2%), and depress (×=).
(5) Record the net amount, 475.50.

b. Marchant Non-Listing Calculator

(1) Enter 567.49, and depress (×) key.
(2) Enter .90 (100% — 10%), and depress (=).
(3) Depress (×) key.
(4) Enter .95 (100% — 5%), and depress (=).
(5) Depress (×) key.
(6) Enter .98 (100% — 2%), and depress (=).
(7) Record the net amount, 475.50.

c. Monroe Non-Listing Calculator

(1) Enter 567.49, and depress (×) key.
(2) Enter .90 (100% — 10%).
(3) Depress the (×) key.
(4) Enter .95 (100% — 5%).
(5) Depress the (×) key.
(6) Enter .98 (100% — 2%).
(7) Depress the white (=) key.
(8) Record the net amount, 475.50.

3. COMPLETE PROBLEMS 9-15 in the same manner.

When all problems have been worked:

1. COMPLETE THE TIMED DRILL as usual, and use Grading Scale No. 4 on page 187 to determine your grade.

2. GIVE JOB TO INSTRUCTOR when completed.

29 PRORATION

JOB NO. 29
PRORATION

Name _____ No. of Errors _____
Period _____ Date _____ Rating _____

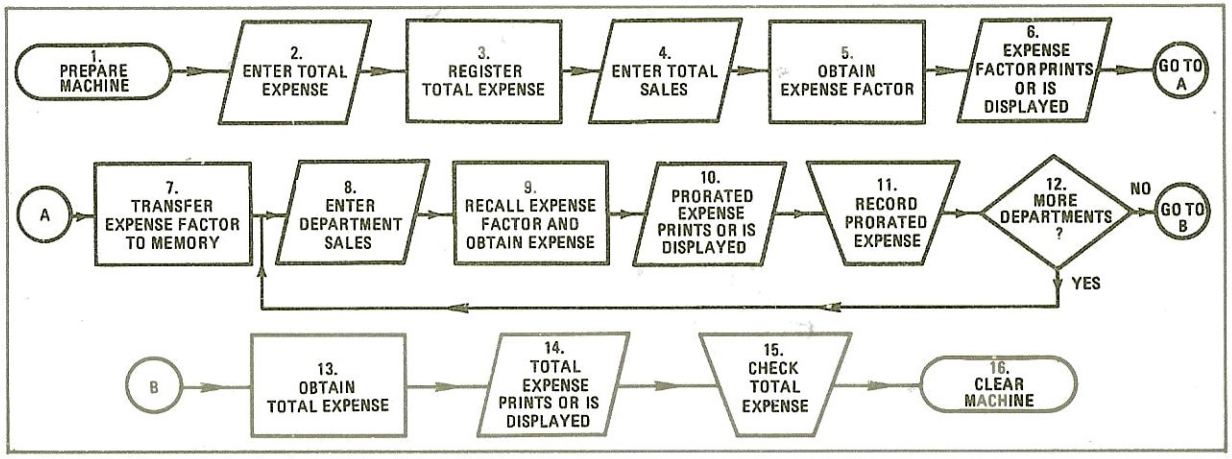
AIM:

To learn how to prorate expenses and to "force" the computations to balance by increasing or decreasing the largest allocation.

PROCEDURE

To prorate Overhead Expense of $57,942 in Problem 1, follow these steps:

1. **PREPARE MACHINE.** Set decimal set wheel at "7."
2. **ENTER TOTAL EXPENSE** ($57,942.00). On non-listing machines, expense will be displayed at this point.
3. **REGISTER TOTAL EXPENSE.**
   a. **Friden Listing** — Depress (FIRST NMBR) key. Expense is printed at this point.
   b. **Marchant** — Depress (÷) key.
   c. **Monroe** — Depress (÷) key.
4. **ENTER TOTAL SALES** ($178,606). On non-listing machines, total sales will be displayed at this point.
5. **OBTAIN EXPENSE FACTOR.** On **Friden Listing**, depress (÷=) key. On **Marchant**, depress (=) bar. On **Monroe**, depress white (=) key.
6. **EXPENSE FACTOR PRINTS OR IS DISPLAYED** (.3244124). On **Monroe**, reset decimal set wheel at "2" and "5/4."
7. **TRANSFER EXPENSE FACTOR TO MEMORY.**
   a. **Friden Listing** — Depress (TO MEMORY) key. Change decimal set wheel to "2."
   b. **Marchant** — Depress (×) key.
   c. **Monroe** — Depress (AM), (K), and (×) keys.
8. **ENTER DEPARTMENT SALES** ($44,150 for Dept. A in Problem 1). On non-listing machines, amount of sales is displayed at this point.



Flowchart for Problems I–III and Timed Drill.

I

Prorate Overhead Expense of $57,942 to the 8 departments on the basis of their sales.

Dept.	Sales	Prorated Overhead Expense
A	44,150	14,322.79
B	12,386	4018.17
C	11,987	3888.72
D	72,583	23546.80
E	10,705	3365.78
F	6,574	2132.68
G	12,162	3945.50
H	8,059	2614.44
Total	178,606	57,942.00

II

Prorate Advertising Expense of $75,000 to the 5 departments on the basis of their sales.

Dept.	Sales	Prorated Advertising Expense
A	$ 35,404	
B	26,786	
C	45,231	
D	37,269	
E	25,310	
Total	$170,000	$ 75,000.00

87

JOB NO. 29 / CONTINUED

III

Prorate Rent Expense of $50,000 to the 5 departments on the basis of area occupied by each.

Dept.	Square Ft. Occupied	Prorated Rent Expense
A	675	
B	1,025	
C	862	
D	738	
E	2,525	
Total	5,825	$ 50,000.00

TIMED DRILL

Prorate Overhead Expense of $86,143.50 to the five departments on the basis of their sales.

Dept. No.	Title	Sales	Prorated Expense
301	Furniture	$ 19,120	7,268.85
302	Paints	61,153	23,248.54
303	Budget Shop	78,146	29,708.76+2 or 29,708.77+1
304	Small Appliances	49,053	18,648.48
305	Household Articles	19,120	7,268.85
	Total	$226,592	$86,143.50

TIMED DRILL

Finished at _____ o'clock

Started at _____ o'clock minutes

Subtract _____ required

Prorate Selling Expense of $150,543.50 to the five departments on the basis of their sales.

Dept. No.	Title	Sales	Prorated Expense
331	Men's Shop	$117,000	27,977.04
332	Better Shoes	111,873	26,751.07
333	Hardware	105,250	25,167.38
334	Stationery	150,145	35,902.67+1
335	Luggage	145,305	34,745.33
	Total	$629,573	$150,543.50

29 PRORATION

9. **RECALL EXPENSE FACTOR AND OBTAIN PRORATED EXPENSE.**
   a. **Friden Listing** — Depress (FROM MEMORY) and (×=) keys for the first dept.; for all others, depress (FROM MEMORY) and (×+) keys.
   b. **Marchant** — Depress blue (∓) key.
   c. **Monroe** — Depress white (=) key.
10. **PRORATED EXPENSE PRINTS OR IS DISPLAYED.**
11. **RECORD PRORATED EXPENSE** ($14,322.81 for Dept. A of Problem 1).
12. **MORE DEPARTMENTS?** If there are, go back to Step 8. If not, proceed to Step 13.
13. **OBTAIN TOTAL EXPENSE.**
    a. **Friden Listing** — Depress (PRINT) to get total of 57,941.99.
    b. **Marchant** — Depress (TOTAL) bar and round off total to 2 decimals — 57,942.00.
    c. **Monroe** — Depress recall memory (RM) key to get total of 57,941.99.
14. **TOTAL EXPENSE PRINTS OR IS DISPLAYED.**
15. **CHECK TOTAL EXPENSE** and, if necessary, adjust Dept. D, the largest figure, upward by 1¢ to 23,546.83, to "force" the balance.
16. **CLEAR MACHINE.**

Follow the above procedure for the remaining problems.

When all problems have been completed:

1. **COMPLETE THE TIMED DRILL** as usual. Use Grading Scale No. 2 on page 187 to determine your grade.
   a. If you have time, do the Timed Drill again. Record your best grade in the Achievement Chart on page 188.
2. **GIVE JOB TO INSTRUCTOR** when completed.

30 REVIEW

TOUCH-OPERATED, TEN-KEY ELECTRONIC CALCULATOR

JOB NO. 30
REVIEW

Name _____
Period _____ Date _____
No. of Errors _____ Rating _____

Time Completed _____
Time Started _____
Minutes Required _____

AIM:

To review the operating principles presented in Job Nos. 21-29.

PROCEDURE

1. **PREPARE MACHINE,** and clear it.
   a. For problems involving multiplication, set decimal control as follows:
      (1) **Friden,** at "2."
      (2) **Marchant,** depress "4" and (CLEAR) simultaneously. Round answers to two decimals.
      (3) **Monroe,** at "2" and "5/4."
   b. For problems involving division, turn the decimal set wheel on the:
      (1) **Friden,** at "3" and round off the quotients to two decimals manually.
      (2) **Monroe,** at "2" and "5/4."
      (3) **Marchant,** depress "4" and (CLEAR) simultaneously. Round quotients to two decimals.
   c. For Problem 35, set decimal control at "7" on **Friden** and **Marchant,** at "10" and "5/4" on **Monroe** for the division portion of the problem. Change to two decimals for the multiplication calculations.
2. **DO EACH PROBLEM** only once. If your machine has a tape, number each problem.
3. **RECORD ANSWERS** below or beside each problem, and in the Answers column at the right.
4. **RECORD TIME** the job was started, the time it was completed, and the number of minutes required to complete the job in the spaces provided. In recording the time, drop fractions of a minute smaller than ½. Fractions larger than ½ minute but less than one full minute are recorded as ½ minute. Subtract to get the time required for completion of the job.

1	2	3	4	5
16.75	93.65	845.75	95.10	146.10
27.15	38.09	−12.10	−9.85	−26.75
92.50	17.18			
68.13	36.06			
45.10	47.48			
65.25	58.65	6	7	8
81.04	24.05			
57.85	61.56	86.91	24.81	28.01
10.64	36.02	−15.85	−91.45	−86.05

9. 267.125 × 86.205 _____
10. 96.875 × 157.625 _____
11. 150.065 × 49.125 _____
12. 87.375 × 372.075 _____
13. 456.125 × 87.285 _____
14. 188.565 ÷ 2.781 _____
15. 305.875 ÷ .875 _____
16. 625.125 ÷ 25.67 _____
17. 906.075 ÷ 8.125 _____
18. 351.166 ÷ 1.667 _____

Find the discount and the net amount:

19. 865.10 less 25% Discount _____ Net Am't. _____
20. 704.75 less 15% Discount _____ Net Am't. _____

8 9

ANSWERS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

JOB NO. 30 / CONTINUED

Multiply:

21 38 @ 4.75 _____

22 40 @ 4.75 _____

23 48 @ 4.75 _____

24 53 @ 4.75 _____

25 42 @ 4.75 _____

Accumulate:

26 128.25 × 4.125

305.75 × 8.333

96.01 × 4.875

163.85 × 2.75

Total _____

Commission on:

27 7,475.10 @ 7% _____

28 3,625.75 @ 4 1/4% _____

Dividend on:

29 5,167.15 @ 4 1/4% _____

30 961.12 @ 5% _____

Find percent of increase:

31 Current Sales $96,145 Previous Sales $92,875 _____

32 Current Sales 87,769 Previous Sales 80,201 _____

Find the net amount of the following bills:

33 1,675.45 less 10% - 5% - 5% _____

34 4,841.67 less 25% - 10% - 10% _____

35 **Prorate Rent Expense** of $67,000 on the basis of area occupied.

Dept. No.	Title	Square Feet Occupied	Prorated Rent Expense
101	Budget Shop	850	_____
102	Furniture	1,275	_____
103	Major Appliances	3,150	_____
104	Household Articles	975	_____
	Total	6,250	$67,000.00

ANSWERS

21 _____

22 _____

23 _____

24 _____

25 _____

26 _____

27 _____

28 _____

29 _____

30 _____

31 _____

32 _____

33 _____

34 _____

35 _____

30 REVIEW

5. **DO JOB AGAIN,** if you have the time. Try to improve your speed.
6. **ARRANGE TAPES** in numerical order, and attach them to the upper left corner of the job sheet.
7. **WRITE YOUR NAME** and other information required in the spaces provided at the upper center of the job sheet.
8. **GIVE JOB TO INSTRUCTOR** when completed.

NOTE: Before proceeding to the next job, ask your instructor about Test No. 6. Test Nos. 5 and 6 should be completed before you start another job.

ON THE JOB

Equipment costs money.

Handle your machine with care.

TABLE OF RECIPROCALS

		100		200		300		400	
1 1000 000	50 2000 000	100 1000 000	150 6666 667	200 5000 000	250 4000 000	300 3333 333	350 2857 143	400 2500 000	450 2222 222
2 5000 000	51 1960 784	1 9900 990	51 6622 517	1 4975 124	51 3984 064	1 3322 259	51 2849 003	1 2493 766	51 2217 295
3 3333 333	52 1923 077	2 9803 922	52 6578 947	2 4950 495	52 3968 254	2 3311 258	52 2840 909	2 2487 562	52 2212 389
4 2500 000	53 1886 792	3 9708 738	53 6535 948	3 4926 108	53 3952 569	3 3300 330	53 2832 861	3 2481 390	53 2207 506
	54 1851 852	4 9615 385	54 6493 506	4 4901 961	54 3937 008	4 3289 474	54 2824 859	4 2475 248	54 2202 643
5 2000 000	55 1818 182	5 9523 810	55 6451 613	5 4878 049	55 3921 569	5 3278 689	55 2816 901	5 2469 136	55 2197 802
6 1666 667	56 1785 714	6 9433 962	56 6410 256	6 4854 369	56 3906 250	6 3267 974	56 2808 989	6 2463 054	56 2192 982
7 1428 571	57 1754 386	7 9345 794	57 6369 427	7 4830 918	57 3891 051	7 3257 329	57 2801 120	7 2457 002	57 2188 184
8 1250 000	58 1724 138	8 9259 259	58 6329 114	8 4807 692	58 3875 969	8 3246 753	58 2793 296	8 2450 980	58 2183 406
9 1111 111	59 1694 915	9 9174 312	59 6289 308	9 4784 689	59 3861 004	9 3236 246	59 2785 515	9 2444 988	59 2178 649
10 1000 000	60 1666 667	110 9090 909	160 6250 000	210 4761 905	260 3846 154	310 3225 806	360 2777 778	410 2439 024	460 2173 913
11 9090 909	61 1639 344	11 9009 009	61 6211 180	11 4739 336	61 3831 418	11 3215 434	61 2770 083	11 2433 090	61 2169 197
12 8333 333	62 1612 903	12 8928 571	62 6172 840	12 4716 981	62 3816 794	12 3205 128	62 2762 431	12 2427 184	62 2164 502
13 7692 308	63 1587 302	13 8849 558	63 6134 969	13 4694 836	63 3802 281	13 3194 888	63 2754 821	13 2421 308	63 2159 827
14 7142 857	64 1562 500	14 8771 930	64 6097 561	14 4672 897	64 3787 879	14 3184 713	64 2747 253	14 2415 459	64 2155 172
15 6666 667	65 1538 462	15 8695 652	65 6060 606	15 4651 163	65 3773 585	15 3174 603	65 2739 726	15 2409 639	65 2150 538
16 6250 000	66 1515 152	16 8620 690	66 6024 096	16 4629 630	66 3759 398	16 3164 557	66 2732 240	16 2403 846	66 2145 923
17 5882 353	67 1492 537	17 8547 009	67 5988 024	17 4608 295	67 3745 318	17 3154 574	67 2724 796	17 2398 082	67 2141 328
18 5555 556	68 1470 588	18 8474 577	68 5952 381	18 4587 156	68 3731 343	18 3144 654	68 2717 391	18 2392 344	68 2136 752
19 5263 158	69 1449 275	19 8403 361	69 5917 160	19 4566 210	69 3717 472	19 3134 796	69 2710 027	19 2386 635	69 2132 196
20 5000 000	70 1428 571	120 8333 333	170 5882 353	220 4545 455	270 3703 704	320 3125 000	370 2702 703	420 2380 952	470 2127 660
21 4761 905	71 1408 451	21 8264 463	71 5847 953	21 4524 887	71 3690 037	21 3115 265	71 2695 418	21 2375 297	71 2123 142
22 4545 455	72 1388 889	22 8196 721	72 5813 953	22 4504 505	72 3676 471	22 3105 590	72 2688 172	22 2369 668	72 2118 644
23 4347 826	73 1369 863	23 8130 081	73 5780 347	23 4484 305	73 3663 004	23 3095 975	73 2680 965	23 2364 066	73 2114 165
24 4166 667	74 1351 351	24 8064 516	74 5747 126	24 4464 286	74 3649 635	24 3086 420	74 2673 797	24 2358 491	74 2109 705
25 4000 000	75 1333 333	25 8000 000	75 5714 286	25 4444 444	75 3636 364	25 3076 923	75 2666 667	25 2352 941	75 2105 263
26 3846 154	76 1315 789	26 7936 508	76 5681 818	26 4424 779	76 3623 188	26 3067 485	76 2659 574	26 2347 418	76 2100 840
27 3703 704	77 1298 701	27 7874 016	77 5649 718	27 4405 286	77 3610 108	27 3058 104	77 2652 520	27 2341 920	77 2096 436
28 3571 429	78 1282 051	28 7812 500	78 5617 978	28 4385 965	78 3597 122	28 3048 780	78 2645 503	28 2336 449	78 2092 050
29 3448 276	79 1265 823	29 7751 938	79 5586 592	29 4366 812	79 3584 229	29 3039 514	79 2638 522	29 2331 002	79 2087 683
30 3333 333	80 1250 000	130 7692 308	180 5555 556	230 4347 826	280 3571 429	330 3030 303	380 2631 579	430 2325 581	480 2083 333
31 3225 806	81 1234 568	31 7633 588	81 5524 862	31 4329 004	81 3558 719	31 3021 148	81 2624 672	31 2320 186	81 2079 002
32 3125 000	82 1219 512	32 7575 758	82 5494 505	32 4310 345	82 3546 099	32 3012 048	82 2617 801	32 2314 815	82 2074 689
33 3030 303	83 1204 819	33 7518 797	83 5464 481	33 4291 845	83 3533 569	33 3003 003	83 2610 966	33 2309 469	83 2070 393
34 2941 176	84 1190 476	34 7462 687	84 5434 783	34 4273 504	84 3521 127	34 2994 012	84 2604 167	34 2304 147	84 2066 116
35 2857 143	85 1176 471	35 7407 407	85 5405 405	35 4255 319	85 3508 772	35 2985 075	85 2597 403	35 2298 851	85 2061 856
36 2777 778	86 1162 791	36 7352 941	86 5376 344	36 4237 288	86 3496 503	36 2976 190	86 2590 674	36 2293 578	86 2057 613
37 2702 703	87 1149 425	37 7299 270	87 5347 594	37 4219 409	87 3484 321	37 2967 359	87 2583 979	37 2288 330	87 2053 388
38 2631 579	88 1136 364	38 7246 377	88 5319 149	38 4201 681	88 3472 222	38 2958 580	88 2577 320	38 2283 105	88 2049 180
39 2564 103	89 1123 596	39 7194 245	89 5291 005	39 4184 100	89 3460 208	39 2949 853	89 2570 694	39 2277 904	89 2044 990
40 2500 000	90 1111 111	140 7142 857	190 5263 158	240 4166 667	290 3448 276	340 2941 176	390 2564 103	440 2272 727	490 2040 816
41 2439 024	91 1098 901	41 7092 199	91 5235 602	41 4149 378	91 3436 426	41 2932 551	91 2557 545	41 2267 574	91 2036 660
42 2380 952	92 1086 957	42 7042 254	92 5208 333	42 4132 231	92 3424 658	42 2923 977	92 2551 020	42 2262 443	92 2032 520
43 2325 581	93 1075 269	43 6993 007	93 5181 347	43 4115 226	93 3412 969	43 2915 452	93 2544 529	43 2257 336	93 2028 398
44 2272 727	94 1063 830	44 6944 444	94 5154 639	44 4098 361	94 3401 361	44 2906 977	94 2538 071	44 2252 252	94 2024 291
45 2222 222	95 1052 632	45 6896 552	95 5128 205	45 4081 633	95 3389 831	45 2898 551	95 2531 646	45 2247 191	95 2020 202
46 2173 913	96 1041 667	46 6849 315	96 5102 041	46 4065 041	96 3378 378	46 2890 173	96 2525 253	46 2242 152	96 2016 129
47 2127 660	97 1030 928	47 6802 721	97 5076 142	47 4048 583	97 3367 003	47 2881 844	97 2518 892	47 2237 136	97 2012 072
48 2083 333	98 1020 408	48 6756 757	98 5050 505	48 4032 258	98 3355 705	48 2873 563	98 2512 563	48 2232 143	98 2008 032
49 2040 816	99 1010 101	49 6711 409	99 5025 126	49 4016 064	99 3344 482	49 2865 330	99 2506 266	49 2227 171	99 2004 008

How to use this table

For figuring such amounts as percentages, costs, and distributions *by multiplying* by the reciprocal of the divisor, prefix the reciprocals found on this table with as many zeros as there are whole-number digits in the divisor, less 1. The reciprocal of 8 is written .125; the reciprocal of 25 is written .04; and the reciprocal of 125 is written .008.

Decimal Equivalents of Common Fractions

3rds	4ths	6ths	8ths	12ths	16ths	32nds	Dec. Eq.
						1/32	.031 25
					1/16	2/32	.062 5
				1/12			.083 33
						3/32	.093 75
			1/8		2/16	4/32	.125
						5/32	.156 25
		1/6		2/12			.166 67
					3/16	6/32	.187 5
						7/32	.218 75
	1/4		2/8	3/12	4/16	8/32	.25
						9/32	.281 25
					5/16	10/32	.312 5
1/3		2/6		4/12			.333 33
						11/32	.343 75
			3/8		6/16	12/32	.375
						13/32	.406 25
				5/12			.416 67
					7/16	14/32	.437 5
						15/32	.468 75
	2/4	3/6	4/8	6/12	8/16	16/32	.5
						17/32	.531 25
					9/16	18/32	.562 5
				7/12			.583 33
						19/32	.593 75
			5/8		10/16	20/32	.625
						21/32	.656 25
2/3		4/6		8/12			.666 67
					11/16	22/32	.687 5
						23/32	718 75
	3/4		6/8	9/12	12/16	24/32	.75
						25/32	.781 25
					13/16	26/32	.812 5
		5/6		10/12			.833 33
						27/32	.843 75
			7/8		14/16	28/32	.875
						29/32	.906 25
				11/12			.916 67
					15/16	30/32	.937 5
						31/32	.968 75

64ths	
1	.015625
2	.031250
3	.046875
4	.062500
5	.078125
6	.093750
7	.109375
8	.125000
9	.140625
10	.156250
11	.171875
12	.187500
13	.203125
14	.218750
15	.234375
16	.250000
17	.265625
18	.281250
19	.296875
20	.312500
21	.328125
22	.343750
23	.359375
24	.375000
25	.390625
26	.406250
27	.421875
28	.437500
29	.453125
30	.468750
31	.484375
32	.500000
33	.515625
34	.531250
35	.546875
36	.562500
37	.578125
38	.593750
39	.609375
40	.625000
41	.640625
42	.656250
43	.671875
44	.687500
45	.703125
46	.718750
47	.734375
48	.750000
49	.765625
50	.781250
51	.796875
52	.812500
53	.828125
54	.843750
55	.859375
56	.875000
57	.890625
58	.906250
59	.921875
60	.937500
61	.953125
62	.968750
63	.984375

All tables printed here and in the student's textbook are available (in reasonable amounts, please) on individual cards from Victor Comptometer Corporation, Educational Dept., 3900 North Rockwell St., Chicago, Illinois 60618.

TO BE CONTINUED IN
PART 2 OF THIS BOOK